# JUPITER INLET LIGHTHOUSE OUTSTANDING NATURAL AREA

## DRAFT MANAGEMENT PLAN

and

ENVIRONMENTAL ASSESSMENT


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Dear Reader:

Enclosed for your review and comment is the draft management plan for the Jupiter Inlet Lighthouse Outstanding Natural Area. This document provides background information on the area, outlines resource goals and objectives, and provides a series of alternatives to meet those goals and objectives. The alternatives were developed through the collective vision of the unique partnership of Federal, county, municipal and non-profit agencies dedicated to this special site, as well as comments from the public provided during the scoping meetings held in the fall of 2008.

We encourage your participation in this planning effort. Comments received on this draft plan will be considered in the preparation of the final. Comments should be received by September 30, 2009 to ensure their full consideration.

Please send written comments to: Bureau of Land Management
Jackson Field Office
411 Briarwood Drive, Suite 404
Jackson, Mississippi 39206
Attention: Jupiter Inlet Lighthouse ONA

Electronic comments can be sent to Jupiter_Comments@blm.gov, or if you have any questions please feel free to call us at (601) 977-5400.

You are also invited to attend a series of workshops on this draft plan which are being scheduled for August and September. We will be posting an electronic version of the plan, as well as the schedule and locations of public meetings on the BLM Jupiter Inlet Lighthouse Outstanding Natural Area web page: http://www.blm.gov/es/st/en/fo/Jackson_Home_Page/jupiter_ONA.html.

We look forward to hearing from you as we plan for the future of the Jupiter Inlet Lighthouse Outstanding Natural Area.

WILD HORSES & BURROS • CADASTRAL SURVEY • GENERAL LAND OFFICE RECORDS • MINERALS • RENEWABLE RESOURCES

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# Executive Summary

On May 8, 2008, Public Law 110-229 brought the Jupiter Inlet Lighthouse Outstanding Natural Area (ONA) into being, designating it a unit within the U. S. Department of Interior, Bureau of Land Management's National Landscape Conservation System. Of the over 850 units within the National Landscape Conservation System, the Jupiter Inlet ONA is the only unit east of the Mississippi River. The designation to the NLCS is very significant – indeed, making this a "national" system.

The Jupiter Inlet ONA is home to a remarkable array of natural and cultural resources. It is one of the rare geographical points on this planet where these two sets of values intersect in such striking fashion. Perhaps this is most clearly demonstrated by the fact that today this 120-acre site provides habitat for 25 special status species (including three Federally-listed) and yet also has cultural resource values so rich that continuous human occupation of 5,000 years can be documented.

There are few locations where history and the natural environment have so perfectly converged. Whether it is the abundant natural resources such as fresh water and rich fisheries that lured Juan Ponce De Leon in 1513 to take respite at Jupiter inlet for several days, or the bluff at the confluence of the Loxahatchee and Indian Rivers – a bluff that attracted indigenous people for thousands of years and provided the optimal location to construct a lighthouse to safely guide ships past the treacherous reefs and sand bars off of Jupiter Inlet. The Jupiter Narrows (Indian River) with its meandering mangrove islands played a key role in concealing blockade runners in the civil war. Today, the same Indian River, which graces the eastern border of the ONA, is one of the richest and most biologically diverse estuaries in North America.

The draft plan that follows describes roughly three dozen proposed actions and alternatives developed by a unique partnership of Federal, county, municipal and non-profit agencies dedicated to this special site. The wide range of issues that are addressed reflect careful consideration and collaboration by these experienced partners on behalf of past, present and future visitors to the Jupiter Inlet Lighthouse Outstanding Natural Area. It strives to strike a balance between use and conservation, between public access and preservation of imperiled habitat, between recreational opportunities and protection of the sacred trust of the people who came before us. The plan describes the resources that currently exist within the ONA, the history of past and present uses, and how we arrived at the point we are today. To meet the requirements of the National Environmental Policy Act of 1969, the document also contains an environmental assessment which describes the affected environment and analyzes the impacts of the actions being proposed. Most importantly, the management plan describes roughly three dozen proposed management actions and alternatives that address a myriad of issues ranging from public access and passive recreation to shoreline stabilization and habitat restoration.

Ideally this plan would be complete, but there are several issues that require more in-depth studies to resolve the management issue. The highest profile of these issues is the ongoing use along the Indian River Lagoon. BLM is funding an engineering study to design address the critical need for slope stabilization along this stretch of the Indian River Lagoon. The results of this engineering study will be provided to the public later this year in the form of alternative options to meet the conceptual resource goals of this plan. Following additional public meetings and agency review, the approved design will be amended to this plan. An interpretive plan will also be developed to meld the stories of this site into a cohesive program and provide for public interpretation of the important resources of this site.

We encourage you to review this plan carefully, engage in the public review process and submit your ideas and comments, as we all strive to manage this very special location for current and future generations.

# Summary of Proposed Actions by Alternative

| PROPOSED ACTION | ALTERNATIVE I | ALTERNATIVE II | NO ACTION ALTERNATIVE |
|---|---|---|---|
| Public Access and Passive Recreation Facilities | | | |
| North Side Parking | Construct 8 car parking on north side | Install traffic light and pedestrian cross-walk across Beach Road | Continue off street parking on north side |
| North Side Hard Trail | Construct concrete trail (ADA compliant) from parking area to wetland boardwalk | Construct shell rock trail from parking area to wetland boardwalk | No trail construction |
| North Side Wetland /Boardwalk Overlook | Construct elevated boardwalk along wetland lagoon to two story wetland overlook | Construct elevated boardwalk along wetland lagoon to single story wetland overlook | No trail construction |
| North Side Soft Trail | Construct soft loop trail to link management roads to parking area on north side | Utilize sections of existing management roads as soft trails, no new trail construction | No trail construction |
| Portal Signage | Install ONA portal signs on north and south side of Beach Road at Highway 1 and at Kato Bridge | Portal sign off Beach Road only | No portal sign |
| Recreational and Cultural Interest Area Signs (brown highway sign) | Apply for tourist destination sign for ONA at Indiantown Road north and south I-95 exits and Florida Turnpike | Same as Alternative I | No highway sign |
| South Side ADA Trail | Construct concrete ADA trail from Jupiter Inlet Lighthouse to the Inlet overlook and to wetland boardwalk south of Kato Bridge. | Construct shell rock loop trail from Jupiter Inlet Lighthouse and another from new trailhead south of Kato Bridge. | No trail or overlook construction |
| South Side Boardwalk | Construct boardwalk along Indian River Lagoon | No boardwalk or overlook construction | No boardwalk or overlook construction |
| South Side Soft Trail | Construct soft loop trail section off concrete ADA trail | Construct shell rock loop trail along the Indian River Lagoon | No trail construction |
| Connect Trail System | Construct elevated boardwalk with rails under Beach Road Bridge for public use | Direct public use under Beach Road Bridge with signage only | No boardwalk construction |
| Bike Racks | Provide bike racks at both new parking areas | Install bike rack at new north side parking area and south side trail head | No bike rack installation |
| Management Roads | Utilize existing asphalt road in U.S. Coast Guard communication site to access northern blocks for management roads | Same as No Action Alternative | Continue to use and maintain existing management roads |
| Management Roads | Eliminate “buffer management road” and management road south of U.S. Coast Guard communication site (maintained as | Eliminate “buffer management road” only, continue to use management road south of U.S. Coast Guard communication | Continue to use and maintain existing management roads |

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| | firebreak only) | site. | |
| Non-motorized Boat Access | Extend the existing mangrove wetland to the south to provide additional access for non-motorized boats | Same as No Action Alternative | No lagoon extension |
| New South Side Parking | Construct parking area and trailhead | Construct trailhead only | No new construction |
| Access Road North of Beach Road | Repave existing asphalt road | Replace existing road with permeable surface road. | No improvements to existing road |
| Historic Structures | | | |
| Historic Keeper's Workshop | Restore historic Keeper's Workshop to Secretary of the Interior Standards for use as a historic workshop and workroom. | Restore as storage building to Secretary of the Interior Standards as workshop only, no public access. | No reconstruction of historic structures |
| Lighthouse Keeper's House and Weather Station | Recreate historic structures for public interpretation, if it does not adversely affect U.S. Coast Guard mission. | Recreate historic structures for Coast Guard housing, if it does not adversely affect U.S. Coast Guard mission. | No recreation of historic structures |
| Bridge Tender's Building | Build kiosk near original Bridge Tender's building site for public interpretation | Recreate Bridge Tender's building near original site for public interpretation | No construction associated with Bridge Tender's building |
| Station J midden protection | Re-cap and sod midden area behind Station J building, install limited pavers in high use area. | Same as No Action | No construction or additional capping behind Station J building |
| Water Taxi Dock | Construct dock for use by authorized water taxi | No water taxi dock construction | No water taxi dock construction |
| Lighthouse Keeper's house cap | Construct a deck over Lighthouse Keeper's house location (under council fig) | Same as No Action Alternative | No construction of deck |
| Jupiter Inlet Lighthouse Mound | Cap lighthouse mound with geoweb, new irrigation system and native plantings, using erosion blankets in less steep areas. | Install new irrigation at lighthouse mound and reduce mowing to establish more vigorous bahia grass coverage. | Continuation of existing management |
| Erosion Control | | | |
| Indian River Lagoon Bluff | Stabilize slope and reduce migration of material into Intracoastal Waterway, establish native vegetation cover, provide opportunities for snorkling, no access to uplands from the water | Stabilize slope and reduce migration of material into Intracoastal Waterway, provide opportunities for boat mooring, and public access to uplands from water. | Continue to exclude public use, but no erosion control measures taken |
| Loxahatchee River | Stabilize actively eroding western shoreline backfilling as needed to return to 1950 shoreline. | Stabilize actively eroding western shoreline at current location. | No shoreline stabilization |

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| Shoreline Mangrove Planter | Construct a mangrove planter along eastern shoreline of Loxahatchee River and southern portion of Indian River Lagoon | Utilize mangrove balls in shallow areas on western shoreline of Loxahatchee River and Indian River Lagoon | No mangrove plantings |
| Habitat Restoration/Enhancement Actions | | | |
| North Side Prescribed Burn Program | Combine current blocks into four units. Eastern units on 15-year burn cycle, mechanical manipulation only on western burn blocks. | Combine current blocks into four units. Eastern two units on 15 year burn cycles and western units on 30-year burn cycles. | Continue with 6 burn blocks |
| South Side Prescribed Burn Program | Utilize prescribed burn program to reduce fuel loads and improve habitat in scrub habitat on 30-year rotation. | Mechanical manipulation only on south side scrub habitat | No fuel reduction or burn program in scrub habitats on south side |
| Invasive Control | Conduct semi-annual invasive sweep of ONA and quarterly sweeps of natural areas in Coast Guard housing area | Continue annual invasive sweep of BLM administered lands only | Continue annual summer sweep of invasive plant species and quarterly sweeps of natural areas in Coast Guard housing area. |
| Invasive Control | Phase the mechanical removal of all woody invasives in Lot 17 over 3 years, with herbicide follow-up and planting of natives, as needed. | Mechanically treat all woody invasives in Lot 17, with herbicide follow-up as needed. | No invasive removal |
| Wetland Construction South Side | Construct an additional wetland lagoon south of Beach Road. | Same as No Action | No new wetland construction |
| Open Sand Areas | Root rake and/or hand clear oak scrub to maintain 10-30% open sand. | Same as No Action | Do not actively create open areas in scrub habitats |
| Roosting and cavity opportunities | Install osprey platforms, bat roosts, and bird boxes where needed. | Same as No Action | No installation of nest boxes, roosts or platforms |
| Feral Cats | Actively trap and remove feral cats | Same as Alternative 1 | No feral cat trapping |
| Four-petal pawpaw | Augment existing four petal pawpaw population up to 500 plants over ten years | Augment existing pawpaw population with seeding from onsite plants only up to 300 plants over ten years. | No further augmentation |
| Perforate lichen | Prior to burning occupied habitat, move perforate lichen from vulnerable locations to suitable habitats, including unoccupied habitat in ONA. | Move perforate lichen from vulnerable positions, but only within currently occupied habitat. | No moving of perforate lichen |

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| Florida Scrub Jay | Continue to manage habitat to meet Florida Scrub Jay requirements. Explore options for future reintroduction, if it supports regional effort. | Same as Alternative I | Manage scrub habitat general values |
| Soccer Field Fencing | Replace existing fence with 4' black chain link and native, drought resistant hedge. | Same as Alternative I | Maintain existing 4" x 4" fence |
| Tennis courts | Restrict access to adjacent scrub and install overhead screen to reduce number of stray balls. | Install overhead screen but keep doors unlocked | Continue with unlocked gates and no screen |
| Security | | | |
| Law Enforcement Agreements | Establish Law Enforcement MOU between ONA partners | Same as Alternative I | No coordinated law enforcement effort |
| Supplementary Special Rules | Adopt Palm Beach County Natural Area Ordinance as Supplementary Rules for Lots 15, 16, 17 and 19, and County Parks and Recreation Ordinance for Lot 18 and 20. | Establish new Supplementary Rules | Establish no Supplementary Rules |

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# Jupiter Inlet Lighthouse Outstanding Natural Area
## Alternative 1

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# Jupiter Inlet Lighthouse Outstanding Natural Area
## Alternative 2

# Part I. Introduction

## A. Location and Setting

The Jupiter Inlet Lighthouse Outstanding Natural Area is located on south Florida's Atlantic coast in northern Palm Beach County. It sits at the confluence of the Loxahatchee River and the Indian River Lagoon (Intracoastal Waterway) approximately ½ mile east of the inlet and includes almost a mile of riverfront shoreline within this coastal estuary. The Outstanding Natural Area (ONA) is 14 miles north of West Palm Beach and about two hours north of Miami via U.S. Highway 1.

The Jupiter Inlet Lighthouse ONA encompasses 120 acres of open space in the urbanized Treasure Coast area. The northern portion of the ONA is in the Village of Tequesta and the southern portion is in the Town of Jupiter. County Road 707 (Beach Road) bisects the ONA and provides access across the Indian River Lagoon to the Jupiter Inlet Colony and the southern reaches of Jupiter Island over a manned drawbridge (Kato Bridge). U.S. Highway 1 runs along the western boundary, and the Indian River Lagoon (also the Intracoastal Waterway) and Loxahatchee River form the southern and eastern boundaries of the ONA.

The legal description of the Jupiter Inlet Lighthouse ONA is:

Tallahassee Meridian
Township 40 South, Range 43 East, Section 31
Including those portions of Lots 15, 16, 17, 18, 19 and 20
within the Outstanding Natural Area boundary, as shown in Figure 2.

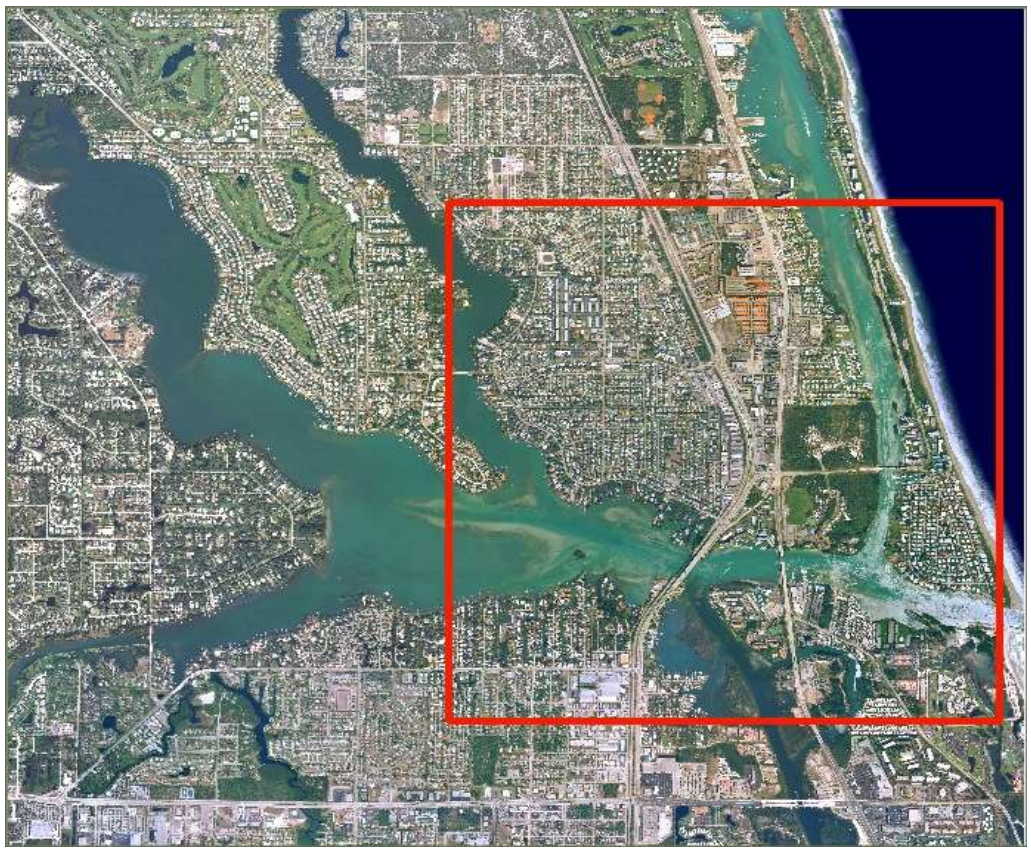


Figure 1. Aerial view of Jupiter Inlet Lighthouse Outstanding Natural Area

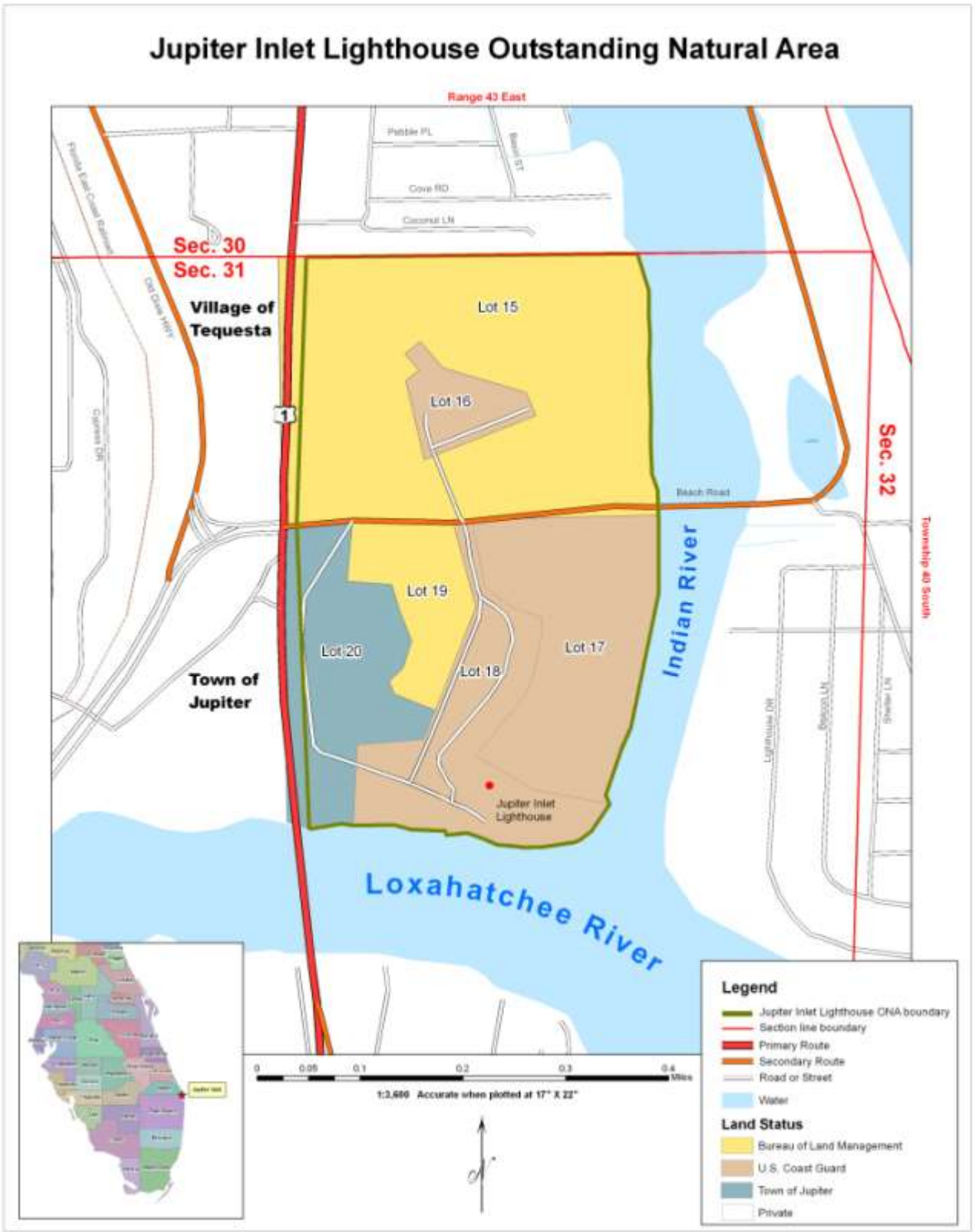



Figure 2. Jupiter Inlet Lighthouse Outstanding Natural Area Map

## B. Relationship to Other Plans and Relevant Statutes

### 1. BLM Resource Management Plans

BLM develops regional land use level plans, or Resource Management Plans (RMPs), to make general land use decisions on the management of BLM-administered lands and resources. The Florida RMP, developed by BLM in 1995, included the public land at Jupiter Inlet and has guided BLM's management of public domain lands at the site. On May 8, 2008, Public Law 110-229, Section 202 designated the site as the Jupiter Inlet Lighthouse Outstanding Natural Area. The language of the act included resource objectives and management guidelines which, while they are generally compatible with the original RMP goals, now supersede them. A new RMP is underway which will update the Florida RMP. The land use level decisions contained in Public Law 110-229, Section 202, will be incorporated into this new RMP, as will the resource objectives and management tools developed in this plan.

### 2. BLM Activity Level Plans

Once the broader land use decisions are made in RMPs, BLM prepares site specific activity level plans to implement these decisions. The Jupiter Inlet Coordinated Resource Management Plan was written in 1997 to provide that activity level planning at Jupiter Inlet. The goals of that plan were to develop local partnerships for the collaborative management of the public resources at Jupiter Inlet, manage for endemic species, remove non-native plant species, preserve cultural resources, reduce hazards to the public, provide recreational opportunities that promote a land and conservation ethic and focus on the natural and cultural resources, and establish partnerships to promote environmental education. The 1997 activity plan has been largely implemented, but will continue to serve as the current management plan until this plan, the Jupiter Inlet Lighthouse Outstanding Natural Area Comprehensive Management Plan, is completed.

### 3. Relevant Laws and Statutes

The following are some of the most relevant laws and regulations that guide BLM in the management of the ONA.

#### a. Public Law 110-229, Section 202

On May 8, 2008, Congress passed the Consolidated Resources Act (PL-110-229) (Act) creating the Jupiter Inlet Lighthouse ONA. The law also established the resource objectives and management parameters by which the new ONA would be managed, including that the site would be managed as a unit of the National Landscape Conservation System. The law also required that a management plan be developed within three years of designation and that the plan be developed with public participation, and in consultation with the Local Partners and the U.S. Coast Guard Commandant.

The following is a summary of those items in the law which specifically guides future management of the new ONA. For the complete text of Public Law 110-229, Section 202 see Appendix A.

> The Secretary, in consultation with the Local Partners and the Commandant, shall manage the Outstanding Natural Area as part of the National Landscape Conservation System in a manner that conserves, protects, and enhances the unique and nationally important historical, natural, cultural, scientific, educational, scenic, and recreational values of the Outstanding Natural Area, including an emphasis on the restoration of native ecological systems.

The purposes of the Outstanding Natural Area are to protect, conserve, and enhance the unique and nationally important historic, natural, cultural, scientific, educational, scenic, and recreational values of the Federal land surrounding the Lighthouse for the benefit of present generations and future generations of people in the United States while allowing certain recreational and research activities to continue in the Outstanding Natural Area; and ensuring that Coast Guard operations and activities are unimpeded within the boundaries of the Outstanding Natural Area.

The enabling legislation specifically authorizes cooperative agreements to facilitate the implementation of the approved management plan and to continue to build on the successful partnerships with local communities and other partners. It directs the Secretary of the Interior through BLM, in accordance with section 307(b) of the Federal Land Management Policy and Management Act of 1976 (**43 U.S.C. 1737**(b)), to enter into cooperative agreements with the appropriate Federal, State, county, other local government agencies, and other partners (including the Loxahatchee River Historical Society) for the long-term management of the Outstanding Natural Area;

The Federal land and any interests in the Federal land included in the Outstanding Natural Area are withdrawn from all forms of entry, appropriation, or disposal under the public land laws; location, entry, and patent under the mining laws; and operation of the mineral leasing and geothermal leasing laws and the mineral materials laws;

The management plan shall include objectives and provisions to ensure the protection and conservation of the resource values of the Outstanding Natural Area;

Restoration of native plant communities and estuaries in the Outstanding Natural Area, with an emphasis on the conservation and enhancement of healthy, functioning ecological systems in perpetuity;

Objectives and provisions to maintain or recreate historic structures;

An implementation plan for a program of interpretation and public education about the natural and cultural resources of the Lighthouse, the public land surrounding the Lighthouse, and associated structures;

A proposal for administrative and public facilities to be developed or improved that are compatible with achieving the resource objectives for the Outstanding Natural Area and would accommodate visitors to the Outstanding Natural Area;

Natural and cultural resource management strategies for the Outstanding Natural Area, to be developed in consultation with appropriate departments of the State, the Local Partners, and the Commandant, with an emphasis on resource conservation in the Outstanding Natural Area and the interpretive, educational, and long-term scientific uses of the resources;

Recreational use strategies for the Outstanding Natural Area, to be prepared in consultation with the Local Partners, appropriate departments of the State, and the Coast Guard, with an emphasis on passive recreation.

**b. Endangered Species Act of 1973, as amended**

Section 7 of the Endangered Species Act (ESA) requires Federal agencies to use their legal authorities to promote the conservation purposes of the ESA and to consult with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), as appropriate, to ensure that effects of actions they authorize, fund,

or carry out will not jeopardize the continued existence of listed species or adversely affect designated critical habitat.

**c. National Historic Preservation Act**

Section 106 of this act requires Federal agencies to review all actions which may affect a property listed on the National Register of Historic Places, or which may affect a property eligible for listing.

**d. Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)**

For activities on Federal lands, NAGPRA requires consultation with "appropriate" Indian tribes to the intentional excavation, or removal after inadvertent discovery, of several kinds of cultural items, including human remains and objects of cultural patrimony.

**e. Archeological Resources Protection Act of 1979 (ARPA)**

For activities on Federal or Indian lands, ARPA prohibits unauthorized excavation, establishes standards for permissible excavation, requires agencies to identify archeological sites, and encourages cooperation between Federal agencies and private individuals.

**f. National Environmental Policy Act of 1969 (NEPA)**

The National Environmental Policy Act (NEPA) requires Federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

**g. Federal Land Policy and Management Act of 1976**

This law established public land policy, guidelines for its administration, and provides for the management, protection, development, and enhancement of the public lands; and for other purposes.

**h. The Watershed Restoration and Enhancement Agreements**

Commonly referred to as the Wyden Amendment, this legislation gives BLM the authority to use appropriated funds to enter into cooperative agreements with other Federal agencies, tribal, State and local governments, private and nonprofit entities, and landowners on projects that protect, restore, and enhance habitat or other resources, or that reduce risk from natural disaster where public safety is an concern, including those lands outside of the public domain.

**i. Coastal Zone Management Act of 1972 – Section 307**

This Act deals mainly with the coastal management plans developed by States and subsequently approved by the Secretary of Commerce. Public domain lands are specifically excluded from the operation of the Act because the Act's definition of "coastal zone" excludes land with Federal jurisdiction. However, Section 307 (c)(1)(A) of the Act states:

"Each Federal agency activity within or outside of the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved State management programs…"

## 4. Other Plans, Programs and Initiatives

The following non-BLM plans and initiatives have the potential to affect management of the Outstanding Natural Area and/or could be supported by future management actions taken within the Outstanding Natural Area.

### a. Loxahatchee River Preservation Initiative

This project is the outgrowth of the watershed management effort that was spearheaded by the Florida Department of Environmental Protection in 1996. Annually the initiative identifies several key projects that are critical in preserving the long-term health of the Loxahatchee River. Projects include urban storm water improvements and the restoration of other tributaries and the estuarine potions of the river. The Loxahatchee River Management Coordinating Council is comprised of federal, state, and regional agencies and local representatives. It advises the Florida Department of Environmental Protection and the South Florida Water Management District on matters that affect administration of the Loxahatchee River, to identify and resolve inter-governmental coordination problems and to enhance communications. Furthermore, the Council is responsible for the development of the Loxahatchee River Management Plan.

### b. Indian River Lagoon Initiative

The Indian River Lagoon borders the eastern boundary of the ONA and stretches 156 miles north across three inter-connected estuaries along Florida's central east coast from Jupiter Inlet to Ponce Inlet. It has national significance as one of the more biologically diverse estuaries in North America with over 3,000 plant and animal species recorded. The Indian River Lagoon National Estuary Program is one of 28 National Estuary Programs, and was established in 1990 through the Environmental Protection Agency's designation of the Indian River Lagoon as an "estuary of national significance" in response to the nomination forwarded to the agency by Florida's Governor. The initial comprehensive management plan was written in 1996. The draft Indian River Lagoon Comprehensive Conservation and Management Plan Update released in 2008 outlines the following goals:

Goal 1: To attain and maintain water and sediment of sufficient quality to support a healthy estuarine lagoon ecosystem;

Goal 2: To attain and maintain a functioning, healthy ecosystem which supports endangered and threatened species, fisheries, commerce, and recreation;

Goal 3: To achieve heightened public awareness and coordinated interagency management of the Indian River Lagoon ecosystem.

Goal 4: To identify and develop long-term funding sources for prioritized projects and programs to preserve, protect, restore and enhance the Indian River Lagoon system.

### c. Loxahatchee River – Lake Worth Creek Aquatic Preserve

This state designated Aquatic Preserve is located immediately west of the ONA and encompasses 9,000 acres of submerged State owned lands. The Preserve includes three forks of the Loxahatchee River: North, Northwest, and Southwest (C-18). These three freshwater tributaries drain into the Loxahatchee River Estuary, which opens easterly to the Indian River Lagoon and the Atlantic Ocean. Lake Worth Creek lies south of the estuary. The Preserve is divided into two sections: the Wilderness and Urban Preserves. The Wilderness Preserve (Wild and Scenic River portion) is upstream of river mile 5.5 along the Northwest Fork and is managed by maintaining the existing wilderness (animals and plants) condition. The remainder of the preserve, designated Urban Preserve, is managed by restoring and enhancing the natural condition of the resources.

### 5. Local Zoning

The current zoning for the ONA within the Town of Jupiter is "Rural Residential". Future zoning for the area is "Public/Institutional". For the northern portion of the ONA within the Village of Tequesta the area is zoned as "Recreation/Open Space". The surrounding areas are zoned residential and commercial.

## C. Existing Land Uses

### 1. Administrative Responsibilities

The Jupiter Inlet Lighthouse Outstanding Natural Area is unique in the collaborative nature of its administration. In addition to BLM, the Consolidated Resources Act (PL-110-229) identifies five entities as partners within the ONA. These include: the U.S. Coast Guard, Palm Beach County, the Town of Jupiter, the Village of Tequesta and the Loxahatchee River Historical Society. BLM and these partners are known collectively as the Jupiter Inlet Working Group. An additional entity, the Jupiter High School Environmental Research and Field Studies Academy, participates in the Working Group because of the key role they play in connecting the site to the local community.

**a. U.S. Coast Guard**
The U.S. Coast Guard retains 45.60 acres of public domain land through withdrawal within the ONA. This includes 40.71 acres south of Beach Road currently used for Coast Guard family housing, ancillary support and a post exchange. There are eleven houses in this area, plus a work shop and small garage. North of Beach Road, the Coast Guard retains 4.89 acres which is currently used for a high frequency radio tower, a remote location servicing Coast Guard installations in Miami and the Keys.

**b. Palm Beach County** – The County's Department of Environmental Resources Management (ERM) has worked collaboratively at Jupiter Inlet with BLM on management of BLM-administered lands within the ONA since 1996 with ERM acting as the onsite manager through a series of cooperative agreements. The site is included in the County's system of 35 Natural Areas which are managed to preserve the rare and diverse native ecosystems, and the endangered, threatened, and rare species of plants and animals they support. ERM's involvement has included invasive species control, implementation of the prescribed burn program, and habitat restoration and enhancement projects. In addition, they provide technical support in other areas of the ONA related to natural resource management.

**c. Town of Jupiter**
The Town of Jupiter received a Recreation and Public Purposes Act lease from BLM on November 23, 1998 covering 26.35 acres covering Lighthouse Park and 8.55 acres of adjacent land. This was followed by a Recreation and Public Use patent for 17.8 acres presented to the Town of Jupiter by the Secretary of the Interior on October 20, 2004. The 8.55 acres included in the original R&PP lease was returned to BLM management for incorporation into the Jupiter Inlet Natural Area because of its high resource values. The current ball fields are used primarily for the city sponsored youth soccer program. There are also tennis courts, pavilion, and parking available to the public within the park. The former naval married officer's housing (Station J Building) is now houses the Loxahatchee River Historical Society's Jupiter Inlet Lighthouse Museum.

**d. Village of Tequesta**
The area of the ONA north of Beach Road is within the incorporated limits of the Village of Tequesta. The Village's management responsibilities have included personnel and equipment support during prescribed burns, support of volunteer events such as National Public Lands Day, and maintenance of the landscaping within the Beach Road and U.S. 1 rights-of-way.

**e. Loxahatchee River Historical Society**

The Historical Society leases the Station J Building from the Town of Jupiter for the Jupiter Inlet Lighthouse Museum. The Historical Society also has a thirty-year lease from the U.S. Coast Guard issued in April 1994 which authorizes Historical Society to conduct guided tours of the lighthouse, as well as restore, rehabilitate, maintain and preserve historically significant structures, as approved by the Florida Historical Preservation Officer. The lease was modified on September 19, 2006 to include the relocation of the 1892 George Washington Tindall Pioneer House and the lease was expanded to include the "Old Housing Office" located near the base of the lighthouse, and the maintenance of the grounds associated with these historic structures.

**f. Jupiter High School Environmental Research and Field Studies Academy**

The ONA has served as an outdoor classroom for the Jupiter High School Environmental Research and Field Studies Academy since 1996. The ONA is a designated "Hands on the Land" site, a Department of the Interior program which links similar outdoor classrooms across the nation to share information about their local ecosystems; as well as creative teaching strategies. The program provides students with a site to practice field skills and test project designs in a realistic setting. Class instruction and more in-depth senior projects have included monitoring efforts in post-burn areas and in the constructed tidal wetlands. The students have been involved in building and testing custom nets for sampling the lagoon fisheries, and in designing a protocol for quantifying sand pine regeneration in two burn plots. They have established photo plots for both burn plots, as well as vegetation transect data.

In addition, Jupiter Environmental Research and Field Studies Academy (ERFSA) at Jupiter High School participate in "Enviroservice" an environmental community service program for sophomores. Students contribute over 200 hours of environmental community service doing exotic plant removal, habitat restoration, water quality monitoring, fish population surveys, native nursery upkeep, plant surveys and the always-needed litter removal and general maintenance of local natural areas as part of their academic learning.

Figure 3. ERFSA students monitoring fish populations in the Jupiter Inlet tidal lagoon.

## 2. Key Dates Related to the Public Domain at Jupiter Inlet

The following are some of the key dates in the history of these public domain lands, which were originally ceded to the United States from Spain on February 22, 1819 under the Onís-Adams Treaty of 1819, ratified by the United States in 1821 (also referred to as the Transcontinental Treaty).

- **October 22, 1854** – Sixty-one acres of the Jupiter Inlet tract were withdrawn from the Fort Jupiter reservation for lighthouse purposes by Executive Order dated October 22, 1854. Although delays in construction occurred due to the Seminole wars, construction of the lighthouse was completed in 1859. The light was first lighted on July 10, 1860. However, the light mechanism was taken by Southern sympathizers during the Civil War. The light was relighted on June 28, 1866 (DuBois 1960). In 1973, the Jupiter Inlet Lighthouse was placed on the National Register of Historic Places (Weed et al. 1982:52).

- **1905** - The U. S. Navy acquired approximately 5.4 acres in 1905 for a wireless station (Weed et al. 1982:44). These holdings were later increased (Kennedy et al. 1995:44).

- **1928 -** The U. S. Navy formally requested transfer of properties within the Lighthouse Station to its jurisdiction. This included an additional 60.45 acres withdrawn by Executive Order Number 4254 dated June 12, 1925, bringing the total to 121.95 acres

- **1939** - Jurisdiction over the entire lighthouse reservation was transferred to the U.S. Coast Guard. During World War II, both the U.S. Navy and U.S. Coast Guard constructed additional buildings at various locations on the tract. The U.S. Navy had terminated its lease by the mid-1960s (Kennedy et al. 1995:45).

- **1951-1987** - The U. S. Air Force leased approximately 30 acres in the northern part of the Jupiter Inlet tract. All buildings or remains of buildings in this area post-date 1956. This part of the tract has been extensively disturbed. In addition, most of the original structures, dating from the 1950s, have been removed (Weed et al. 1982:58).

- **September 11, 1989** - U.S. Coast Guard notified the BLM that portions of the Jupiter Inlet Lighthouse Station were no longer needed and that a board of survey was being initiated to excess 80.68 acres of the property.

- **July 12, 1996** - Public Land Order No. 7202 partially revoked the reservation and 80.68 acres were relinquished to BLM. The U.S. Coast Guard retained 45.60 acres, which included installation housing, a post exchange, the lighthouse and associated buildings on the south side of Beach Road, and a 4.89 acre communication site on the north side.

- **November 23, 1998** - BLM issued a Recreation and Public Purposes Act Lease to the Town of Jupiter for Jupiter Lighthouse Park (26.35 acres). This was subsequently followed up with a Recreation and Public Use patent presented to the Town of Jupiter by the Secretary of the Interior on October 20, 2004 for 17.8 acres, with 8.55 acres originally included in the lease returning to BLM management.

- **May 8, 2008** - Jupiter Inlet Lighthouse Outstanding Natural Area was designated as a unit of BLM's National Landscape Conservation Area in Section 202 of the Consolidated Natural Resources Act (PL-110-229). The pertinent portion of the Act is provided in Appendix A. PL-110-229 states that any public domain no longer needed within the ONA by the U.S. Coast Guard will be returned to the Secretary of the Interior subject only to any environmental remediation that may be required by law.

1

## D. Resources in the Outstanding Natural Area

### 1. Physical Resources

#### a. Topography

The ONA is located on the Atlantic Coastal Ridge, the remains of an ancient coastal dune system formed during the Pleistocene era. These low ridges stretch north along the eastern coast of Florida into Georgia. Within the ONA elevations range from sea level along the Loxahatchee and Indian River Lagoon to 31.4 feet at the crest before falling back to 9 feet near the corner f Beach Road and Highway on the western boundary. The top of the Jupiter Inlet Lighthouse mound stands at almost 60 feet, making it one of the highest points in this area of south Florida. In the southeast corner of the ONA, a 20-foot tall bluff stands along the bank of the Indian River Lagoon created as an area known as the Jupiter Narrows, an area that has been progressively widened to accommodate boat traffic and, ultimately, the Intracoastal Waterway. Historically the inlet at Jupiter was only intermittently open to the sea. Between 1913 and 1922 the inlet was relocated approximately 1,250 feet north to its present location, but closed again from1942 to 1947. Since 1947, biennial maintenance dredging has kept the inlet open for small-craft navigation. The ONA includes nearly a mile of shoreline along the banks of the Loxahatchee and Indian Rivers, which comprise the eastern and southern boundaries of the ONA.

#### b. Air Quality

Air quality in Palm Beach County is generally good. According to the Florida Department of Environmental Quality an average of 87.8 days per year were within the Good category for ozone, particulates, sulfur dioxide, carbon monoxide, and nitrogen dioxide during 2005 – 2007. During this time air quality was considered Moderate for an average of 11.7, and only 0.8 days of Unhealthy for Sensitive Groups were recorded in 2006 and 2007.

#### c. Climate

South Florida has a marked wet season from May through October and a dry season from November through April. The mean annual rainfall pattern averages 45-55 inches. The seasonality of the rainfall and high evaporation rates plays an important role in the ecosystems of the region. Because the abundant rainfall continuously leaches and translocates soluble minerals, most of the mineral soils contain only small amounts of organic matter and soluble plant nutrients.

The Atlantic hurricane season stretches from June 1 through November 30 according to the National Oceanic and Atmospheric Administration and Jupiter's coastal location is vulnerable to high winds and storm surges from the adjacent inlet. The site has been hit by several major hurricanes in the last hundred years. Jupiter was narrowly missed by the Great Miami Hurricane of September 1926, but two years later was hit hard when the eye of the Great Okeechobee/San Felipe Hurricane passed between Jupiter and Boca Raton on September 16, 1928 creating 10 foot storm surges with waves likely as high as 20 feet. Even more devastating, however, forty miles west of Jupiter, heavy rains filled Lake Okeechobee to the brim and the dikes crumbled, flooding the surrounding area in 6 to 9 feet of water. Almost 2,000 people, most African American agricultural workers, perished as a result of this storm.

During the 2004 hurricane season, Jupiter experienced almost direct hits from Hurricane Frances, which made landfall at Stuart just twenty miles to the north as a Category 2 hurricane on September 5, 2004. Three weeks later, on September 26, 2004, Hurricane Jeanne made landfall at almost the same location

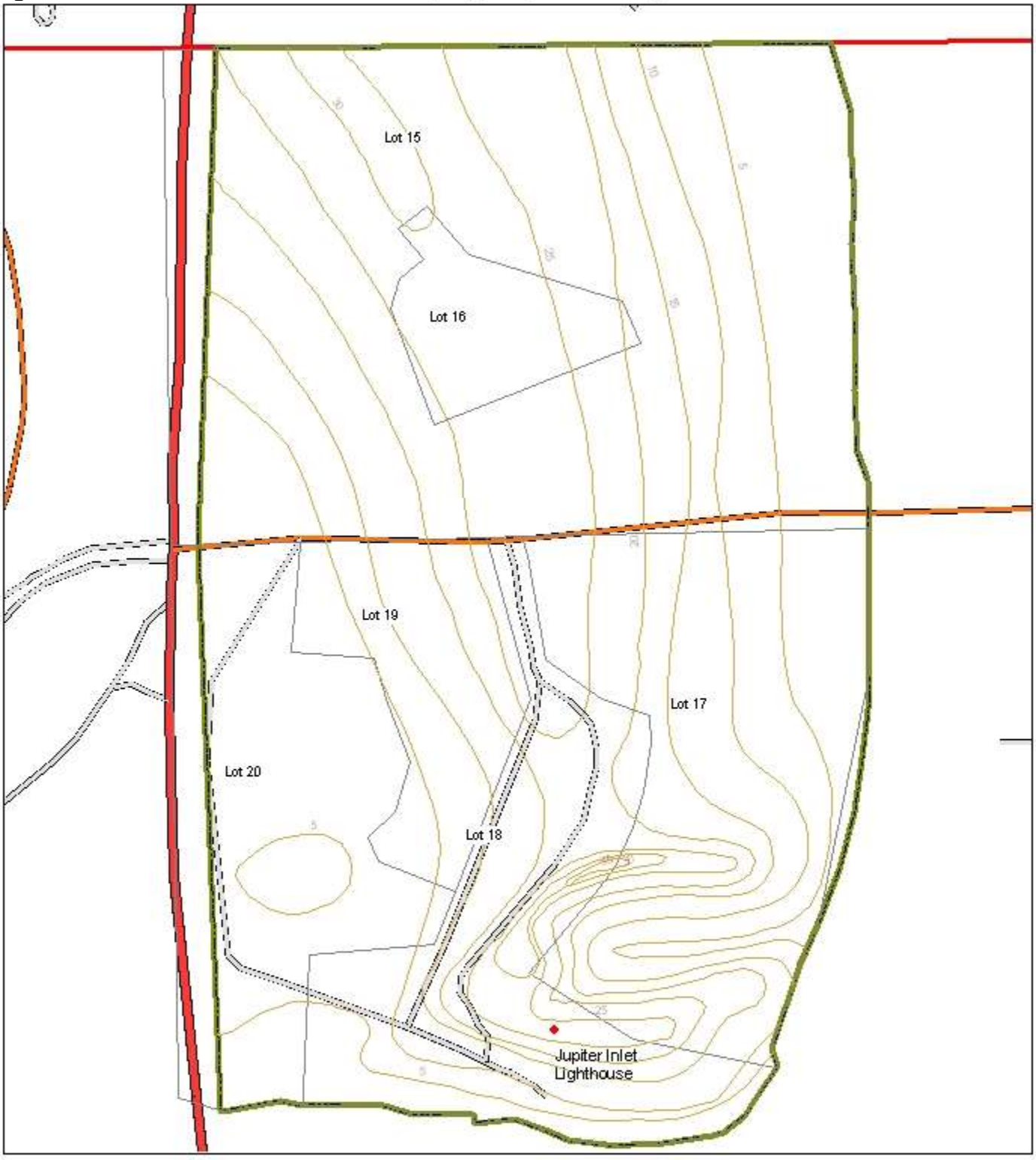
as a Category 3 hurricane. Just over a year later, on October 24, 2005, Jupiter received a direct hit from Hurricane Wilma a large Category 2 hurricane which crossed over the Florida peninsula from the west.

In addition to the tremendous impacts on the residents of South Florida, these hurricanes are a major force in shaping the natural landscapes. This recent series of hurricanes decimated the remaining mature sand pines within the ONA, and the heavy seas undercut the banks along the Loxahatchee River and exacerbated erosion along the Indian River Lagoon. The shorelines continue to be vulnerable to storm damage.

Figure 4. Sand pine snapped during 2004 hurricanes.

# Jupiter Inlet Lighthouse Outstanding Natural Area
# Topographic Map

1




0 200 400 800 1,200 Feet

U.S. Department of the Interior
Bureau of Land Management
Eastern States, Jackson Field Office
May 2009

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual use or aggregate use with other data.

**Legend**

Elevation in feet above sea level

Jupiter Inlet Lighthouse Outstanding Natural Area Boundary

**d. Soils**

Soils have been mapped according to the Palm Beach County soil map provided on-line by the U.S. Department of Agriculture, Natural Resource Conservation Service. This soil map is used for a general soil overview of the ONA. Brown et. Al (1990) urged caution when using soil maps in general because even at the county level soil properties are highly variable across the landscape. In addition, past disturbances can alter the native soils, for example the deposition of dredged spoil materials from the adjacent Intracoastal Waterway.

Almost 89 acres or 74% of the ONA are mapped as St. Lucie-Urban land-Paola Association, which is described as nearly level to sloping, excessively drained soils that are sandy throughout.

The St. Lucie series is excessively drained, deep sandy soils on long, narrow, dune-like ridges and isolated knolls near the Atlantic coast. They formed in thick beds of marine or eolian sand. The water table is below a depth of 6 feet. These white sands extend to a depth of 80 inches or more. Permeability is very rapid. The available water capacity, the organic content, and natural fertility are very low in all layers. Although mapped as an Urban Land association, the native vegetation within the series are typical scrub species including sand pine (*Pinus clausa*), scrub oak (*Quercus spp.),* saw palmetto (*Serenoa repens*), cacti, and lichens.

According to the 1978 Soil Survey of Palm Beach Area, Florida (SCC) Paola sands occur on the lower slopes in Lot 15. These soils are also excessively drained, deep, sandy soils with origins similar to St. Lucie discussed above. These soils have a layer of yellow sands 4 inches thick beginning at a depth of 21 inches, which is transitional to the sandy subsoils to a depth of 80 inches or more. Again, permeability is very rapid, and the available holding water capacity, organic content, and natural fertility are very low.

Almost 26 acres or 21% of the ONA is mapped as a Quartzipsamments soil. This is not a naturally occurring soil type, but rather represents deposited dredged material primarily from the adjacent Intracoastal Waterway.

Just over 5 acres or .04% of the ONA is mapped as Kesson Mucky Sand. These soils are located in the very northeastern corner of the tract along the Indian River Lagoon. The Kesson series consists of deep, very poorly drained, rapid to moderately rapid permeable soils that formed in thick marine deposits of sand and shell fragments in tidal swamps and marshes along the Gulf Coast of Peninsular Florida. Slopes range from 0 to 1 percent. This includes soils flooded by salt or brackish water during high tides. Shell fragments constitute up to 10 per cent of the subsurface layer in some places. Natural fertility is low. This series was formerly mapped as tidal swamp and typically these areas support mangrove swamps, including red mangrove (*Rhizophora mangle*) and black mangrove (*Avicennia germinans*).

**e. Hydrology**

The site is within the Loxahatchee River drainage basin, which covers an area of approximately 210 square miles. The basin consists of nine sub-basins, ranging in size from three square miles to 117 square miles. The sub-basins form three watersheds, each forming a branch, or fork, of the river. The forks merge in a large estuary that drains through Jupiter Inlet to the Atlantic. All of the portions of the Loxahatchee River and the Indian River Lagoon adjacent to the ONA are tidally influenced. There are no permanent freshwater sources within the ONA.

A tidal lagoon was constructed in Lot 15 along the Indian River Lagoon in 1999-2000. Its main outlet is a rock lined entrance in the middle of the project. There is also an outlet via an old mosquito ditch

incorporated at the northern edge of the project, and tidal exchange through the existing mangrove fringe in the northern portion of the tidal lagoon and the Indian River Lagoon

**f. Fire History**

There are no available records of the fire history at Jupiter Inlet prior to 1941. However, based on aerial photographs taken intermittently since that year there is no evidence of major fires after that date. The lack of fire during this time is supported by the relatively even ages of mature sand pine which, based on sample coring done in 1996, were between 40 to 60 years of age at that time.

Since 1998, there have been three prescribed burns conducted north of Beach Road. The first burn (5.3 acres in Prescribed Burn Management Block 1) was predominately scrub oak with a scattered mature sand pine. This block was pre-treated by chopping the standing scrub oak to reduce the spotting potential and flame heights, and was burned on May 14, 1998. The second burn (5.8 acres in Prescribed Burn Management Block 2) had a mature sand pine canopy with a heavily shaded understory of scrub oaks and few forbs. The sand pines in this area were mechanically cleared in September 2001 to reduce the fuel load and spotting potential, but the actual burn was postponed until February 11, 2002, when wind direction conditions finally came into prescription. The third burn (6.0 acres in Prescribed Burn Management Block 5) was conducted on January 31, 2008. The mature sand pines in this block were largely toppled or snapped during the 2004 hurricanes. In 2005, the larger down or standing logs were removed from the site in an effort to reduce the hazardous fuel load, but conditions for burning the remaining slash did not come into prescription until early 2008. These three burns have totaled 17.3 acres or 34 percent of the 51 acres of the intact scrub acreage within the ONA.

Figure 5. Smoke column during 2008 prescribed burn north of Beach Road.

# Jupiter Inlet Lighthouse Outstanding Natural Area
# Prescribed Burn Management Blocks


U.S. Department of the Interior
Bureau of Land Management
Eastern States, Jackson Field Office
July 2009

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**Legend**

Prescribed Burn Management Blocks

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## 2. Natural Resources

### a. Vegetation

The native habitats found within the ONA are Florida scrub, including oak scrub and sand pine scrub at the higher elevations, tropical hardwood hammock along the base of the eastern slope, and mangrove swamp bordering the Indian River Lagoon on the eastern edge.

Scrub – There are 51 acres of intact Florida xeric oak scrub and sand pine scrub within the ONA. Scrub communities are associated with ancient coastal dunes formed along Pleistocene era seas. Remnants of these dunes form the Atlantic Coastal Ridge and the even older interior Lake Wales ridge. Because these ancient dunes occupied some of the highest and driest areas along the coast, they were among the first to be developed and less than 2% of the original acreage remains intact in Palm Beach County. As some of the oldest habitats in the state, scrub habitats support a high proportion of endemics. This coupled with the high rate of loss of scrub habitats has resulted in these areas supporting a relatively high number of special status species. According the Florida Wildlife Conservation Strategy (2007), the state-wide threat category is Very High with the primary stresses being fragmentation and insufficient size of remaining scrub tracts. Within State of Florida 76% of scrub acreage (257,015 acres) is in existing protected or managed areas. Another 3% (11,311 acres) are in Florida Forever projects, while 4% (14,031 acres) are in Strategic Habitat Conservation Areas (SHCA). The remaining 16% (55,101 acres) are other private lands.

Scrub habitats are fire-dependent and adapted to infrequent but intense fires. In the prolonged absence of fire, the structure and species composition of a scrub community can gradually change, often resulting in the succession to xeric hammock (FNAI and FDNR 1990). Alternately, where sand pines are abundant in the canopy, a dense sand pine forest may develop and shade out most of the other species that are typical of scrub (Fernald 1989). Regular fires occurring at intervals of every 20-80 years may return stands of mature scrub to a younger, more open state (FNAI and FDNR 1990). Periodic fire is one of the physical disturbances that may maintain the areas of open sand that characterizes typical scrub. Fire is probably necessary for the growth and proliferation of many of the rare and/or endemic species associated with scrub communities in Florida. In coastal scrubs hurricanes may also be responsible for maintaining scrub characteristics such as the periodic removal of the mature sand pine canopy.

Figure 6. Saw palmetto

The density of sand pine within a scrub canopy is often a reflection of fire frequency. Individual sand pines are killed by fire, and the stand is replaced by new sand pines growing from seeds. Sand pines generally begin to produce cones at about 10 years of age (Austin 1976) and frequent fires reduce the capacity of sand pines to become reestablished. Conversely, long term fire exclusion may also lead to the elimination of sand pines. Myers (1990) estimated that sand pine stands may begin to break up after 50-70 years, and that individual trees rarely reach 100 years of age. Without fire to create the bare soil seed beds and temporarily remove the competing canopy, sand pine regeneration is limited. Florida rosemary, like sand pine, succumbs to fire and is regenerated after burns by seeds stored in the soil. Most scrub shrubs resprout quickly from root stock, flowering and fruiting following a fire, and many flower and fruit more prolifically following a fire. Many of the most rare scrub plants are dependent on the openings in the sand pine and scrub oak canopy created by fire.

Tropical Hardwood Hammock – There are 5.3 acres of intact tropical hardwood hammock within the ONA, located generally west and upland of the mangrove swamp. These hardwood forests occur only in south Florida and are characterized by tree and shrub species on the northern edge of a range that extends southward into the Caribbean. These communities are sparsely distributed along coastal uplands south of a line from about Vero Beach on the Atlantic coast to Sarasota on the Gulf coast. They occur on many tree islands in the Everglades and on uplands throughout the Florida Keys. This is a cold-intolerant tropical community which has very high plant species diversity, sometimes containing over 35 species of trees and about 65 species of shrubs. Characteristic tropical plants include strangler fig, gumbo-limbo, mastic, bustic, lancewood, ironwoods, poisonwood, pigeon plum, Jamaica dogwood, and Bahama lysiloma. Live oak and cabbage palm are also sometimes found within this community.

According to the Florida Wildlife Conservation Strategy (2007) tropical hardwood hammocks' conditions in the state are poor and declining. According to the best available GIS information at the time, 15,232 acres (6,164 ha) of Tropical Hardwood Hammock habitat exist, of which 71% (10,867 ac; 4,398 ha) are in existing conservation or managed areas. Another 10% (1,470 ac; 595 ha) are Florida Forever projects and 5% (783 ac; 317 ha) are SHCA-identified lands. The remaining 14% (2,112 ac; 855 ha) are other private lands. The state-wide threat category is High with the primary stresses including incompatible residential activities that include movement of fertilizer, herbicide, and invasive species from landscape maintenance, activities of people, their pets, and nuisance species, and disposal of yard and household waste. Feral or pet cats and roof rats were specifically identified as threatening species of conservation concern in this habitat.

Mangrove Swamp – There are 5.9 acres of intact mangrove habitat within the ONA. Mangroves form dense stands along the Indian River Lagoon north of Beach Road and surround the tidal wetland constructed in 2000. These brackish-water swamps occur along low-energy shorelines and in protected, tidally influenced bays of southern Florida. This community type is composed of freeze sensitive tree species. With some limited exceptions, mangroves are distributed south of Cedar Key on the Gulf coast and south of St. Augustine on the Atlantic coast. These swamp communities are usually composed of red mangrove, black mangrove, and white mangrove. Depending on slopes and amounts of disturbance, mangrove swamps may progress in zones of single species from seaward (red mangrove) to landward (white mangrove) areas. Buttonwoods usually occur in areas above high tide. Often vines, such as rubber vines and morning-glory, clamber over mangroves, especially at swamp edges. According to the best available GIS information at the time 588,434 acres (238,131 ha) of Mangrove Swamp habitat exist, of which 88% (515,783 ac; 208,730ha) are in existing conservation or managed areas. Another 2% (10,376 ac; 4,199 ha) are in Florida Forever projects and 3% (16,997 ac; 6,878 ha) are in SHCA-designated lands. The remaining 7% (45,278 ac; 18,323 ha) are in other private lands. The state-wide threat category is Very High with the primary habitat specific stresses being reduction in freshwater flows from dam operations, lack of tidal fluctuation caused by mosquito impoundments, loss of mangroves from inappropriate pruning by coastal property owners, and coastal development.

Figure 7. Planted mangroves surround tidal wetland two years after tidal lagoon was completed in 2000.

Disturbed Habitats - Approximately 23 acres located primarily in Lot 17 are mapped as Disturbed Habitat because of the dominance of invasive plant species, primarily Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia).* The understory and particularly the area along the western border along the Coast Guard housing supports most of the exotic, invasive species known to occur at the site (see Appendix C, Master Species List). Outside of the developed Lighthouse Park, Lot 17 and the Jupiter Lighthouse mound support the most extensive areas of invasive plants remaining in the ONA. There are vestiges of the native vegetation. Wild coffee (*Psychotria nervosa*) is relatively common in the understory and gumbo limbo (*Bursera simaruba)* and strangler fig (*Ficus aurea*) are scattered through the eastern portion of the lot. There are two areas of scrub, covering approximately 3 acres, remaining in the upland areas, including a relatively intact scrub with open sand and endemics, including nodding pinweed (*Lechea cernua*).

Figure 8. Mulching Brazilian pepper as part of exotic removal program.

**b. Wildlife**

Despite its urban setting and the 120 acres of the ONA provide habitat for a relatively wide array of wildlife species.

Mammals - Mammals recorded on site include gray fox (*Urocyon cinereoargenteus*), bobcat *(Lynx rufus*), and river otter (*Lutra canadensis*). Armadillo (*Dasypus novemcinctus*) and opossum (*Didelphis virginiana)* are common and raccoon numbers are likely artificially high because of the availability of urban food sources. White-tailed deer (*Odocoileus virginianus*) were seen onsite occasionally during the mid-1990s and tracks were recently observed again in April 2009, but use is expected to be sporadic at best.

Reptiles/Amphibians - Common native reptile species include southern black racer snake (*Coluber constrictor*), coachwhip snake (*Masticophis flagellum*), six-lined racerunner lizard (*Cnemidophorus sexlineatus*), green anole (*Anolis carolinensis*), and gopher tortoise (*Gopherus polyphemus*). Non-native species found on site include the brown anole (*Anolis sagrei*), northern curly-tailed lizard (*Leiocephalus carinatus armouri*), and fox gecko (*Hemidactylus garnoti*). These are discussed below under Non-native Wildlife Species.

Birds – Eighty-five bird species have been recorded at the ONA, and that list has been increasing due to the diligent efforts of Dr. Jack Hailman and his wife Liz Hailman. Almost a quarter of the recorded species are associated with the mangrove wetlands or shorelines of the Loxahatchee River or Indian River Lagoon, including Osprey, Great Blue Heron, Great Egret, Reddish Egret, Snowy Egret, Little Blue Heron and Belted Kingfisher. Mottled Duck have nested within the ONA in native plantings along the bank of the Loxahatchee River.

The resident birds associated with the upland habitats include Blue Jay, Fish Crow, Chuck-will's-widow, Carolina Wren, Brown Thrasher and Northern Cardinal. Spring and fall migrants as well as winter visitors boost bird numbers and diversity, and include Yellow-rumped Warbler, Pine Warbler, Palm Warbler, Black and White Warbler, Northern Parula, and Painted Bunting.

Birds recorded within the ONA that are included on the U.S. Fish and Wildlife's list of Birds of Conservation Concern in this region include: Common Ground Dove, Chuck-wills-widow, Northern Loggerhead Shrike, Pine Warbler, and Painted Bunting. Bird species listed as Species of Conservation of Concern by the State of Florida include Florida Mottled Duck, Brown Pelican, Great White Heron, Snowy Egret, Little Blue Heron, Tricolored Heron, Black-crowned Night Heron, Yellow-crowned Night Heron, White Ibis, Gray Kingbird, and Florida Prairie Warbler.

Fish – Twenty-one species of fish have been recorded in the tidal lagoon since its construction in 2000 by the Environmental Research and Field Studies Academy. The adjacent Indian River Lagoon, a 156-mile estuary along Florida's east coast, is perhaps the most biologically diverse estuarine system in the continental United States. According to the Final Indian River Lagoon-South Project Implementation Report and EIS Indian River Lagoon, Gilmore (1977, 1981) described over 800 species of fish collected in the southern IRL from the freshwater tributaries out to the deep reefs. Many of the fish spend part or all of their life in the estuary and include important recreational and commercial species such as the spotted seatrout, red drum, snook, tarpon, and gray snapper, and sheepshead. Mullet spend a majority of their life in the Indian River Lagoon and are an important forage fish for higher-level predators.
In 1990, the U.S. Environmental Protection Agency designated the Indian River Lagoon as an "estuary of national significance" which initiated both local and national efforts to better protect the biodiversity of this rich ecosystem.

**c. Special Status Wildlife Species**

Eight animal species recorded at the Jupiter Inlet Natural Area have been listed as Endangered (E) or Threatened (T) by either the U.S. Fish and Wildlife Service (USFWS) or the Florida Fish and Wildlife Conservation Commission (FWC). In addition, Florida Natural Areas Inventory (FNAI) or FWC have ranked an additional fourteen species recorded at the site as a Species of Special Concern or as critically imperiled (S1), imperiled (S2), or rare (S3) within the State of Florida. The following sections contain a summary of management recommendations for these species.

Florida scrub-jay (*Aphelocoma coerulescens)* - The southern Florida population of Florida Scrub Jay has been in rapid decline and the Jupiter Inlet Lighthouse ONA scrub jay population has unfortunately followed that trend. In 1995 there were three Florida scrub jay families being monitored on the site (Iverson, unpublished data). The last pair, including a male banded as an adult on the site in 1992, was last seen in the spring of 2002 utilizing Lot 18 and 19. The presence of a scrub jay nest in Lot 19 in 2003 provides evidence that this pair was still on the site that year, but jays have not occupied the site since then. The reason for the decline is not known. The site continues to provide apparently suitable habitat and two of the burn areas have reached the optimal age and structure for scrub jays. Annual surveys during the breeding season continue on the site.

In 2008, an epidemic resulted in documented losses of scrub jays at Archbold Biological Station and other areas of the state. Palm Beach County appears to have suffered dramatic declines. According to Jay Watch volunteers 2008 numbers in northern and mid-Palm Beach County were down to 11 individuals, five families over five sites. In contrast, there were 122 birds recorded in this area in 1999 and 144 in 1993. The Florida Scrub Jay is listed as Threatened by both USFWS and FWC.

Figure 9. Banded Florida Scrub Jay.

Gopher tortoise (*Gopherus polyphemus*) - The gopher tortoise population at Jupiter Inlet appears to be stable or increasing. Initial inventories of all suitable upland habitats in 1995 surveys identified 13 active burrows, 30 abandoned burrows and 1 inactive burrow in Lot 15 and 19. Based on a standard Fish and Wildlife Commission formula[1], this indicates a population of 0.19 tortoises per acre. Subsequent tract-wide monitoring in 2005 located 35 active burrows, 98 abandoned burrows, and 58 inactive burrows, or an estimated 1.26 tortoise per acre. In 2007, based a representative survey of 9.83 acres or 22% of the suitable upland habitat, the population was estimated to be 1.5 tortoises per acre.

The gopher tortoise is known as a keystone species in Florida natural areas because of the important role that this species plays in relation to other plants and animals in upland natural communities. At least 300 species of animals are known to use gopher tortoise burrows (Moler 1992). Speake (1981) developed a list of 81 gopher tortoise burrow commensals. The gopher tortoise also plays an important role in the distribution of flora in gopher tortoise habitats by providing open, sandy areas near the burrow entrances for seedling establishment (Laessle 1942).

Florida mouse (*Podomys floridanus*) – This scrub endemic occurs in central Florida and along the east coast, with an isolated population in the Florida panhandle (Whitaker and Hamilton 1998). It is most common in sand pine scrub and high pinelands dominated by longleaf pine (*Pinus palustris*), as well as scrubby flatwoods, sand hill and coastal scrub. This species is generally associated with gopher tortoise burrows ( Cox et al. 1987). There was evidence that one individual was captured within the ONA in the oak scrub near the Intracoastal Waterway by Ecological Consultants in 1995. Retrapping of suitable open sand areas throughout the ONA was conducted over four days beginning on March 30, 2009. There were no Florida mouse captures after 523 trap nights[2]. The Florida mouse is listed as G3/S3 by FNAI; it is not listed by USFWS; it is listed as a species of special concern by FWC.

Florida scrub lizard (*Sceloporus woodi*) - This small endemic lizard occurs in sand pine scrub and other xeric habitats with dry, well-drained, deep sandy soils and open patches of un-vegetated sand. The Florida scrub lizard prefers early successional scrub, where it feeds primarily on ants, adult beetles, and orthopterans (Jackson 1973b). It is listed as a common or characteristic species of coastal scrubs in the Treasure Coast Region by Fernald (1989). The Florida scrub lizard is listed as G3/S3 by FNAI, but it is not listed by USFWS or FWC.

Brown Pelican (*Pelecanus occidentalis*) – Brown Pelican frequently loaf and feed in the adjacent Loxahatchee River and Indian River Lagoon. This species ranges from South America north to the south Atlantic and Gulf coasts of North America. It is a Florida resident, and feeds on fish. In Florida, the brown pelican builds nests in colonies most often on mangrove islands surrounded by open water (Kale and Maehr, 1990). Since the ONA does not possess typical nesting habitat, i.e. appropriate mangrove islands, it is not expected to nest here. It has historically suffered a decline due to insecticide uses, but Kale and Maehr (1990) still considered it to be common throughout the Florida coastline. The brown pelican is listed as G4/S3 by FNAI; it is not listed by USFWS; it is listed as a Species of Special Concern by FWC.

Reddish Egret (*Egretta rufescens*) - This wadding bird is likely an occasional visitor to the tidal wetlands and adjacent shorelines where it forages for small fishes, crustaceans and insects, waiting motionless for an opportunity to strike. This species was nearly extirpated from the United States by the plume trade, is now recolonizing areas of former occurrence where nesting/foraging habitat still remains. Habitat loss and human disturbance are now the primary threats. Christmas Bird Count (CBC) data indicate declines

[1] Tortoises per acre = (active + inactive) X 0.614 acres surveyed
[2] trap nights equal the number of traps multiplied by the number of nights.

in Texas, but increases in Florida. Reddish Egret is listed as G4/S2 by FNAI; it is not listed by USFWS; it is listed as a species of special concern by FWC.

Figure 10. Reddish Egret

Snowy Egret (*Egretta thula*) – This wading bird has been observed feeding in the tidal wetland. Snowy Egret are local residents feeding in many types of permanently and seasonally flooded wetlands, streams, lakes, and swamps, and in manmade impoundments and ditches. They usually prefer calm waters. They have not been documented breeding within the ONA. According to FNAI, numbers have been declining since the 1950s, possibly faster than declines of other herons and egrets. In 1989, this species was found in only 22 percent of the colonies where it formerly occurred. Persistent patterns of wetland destruction and alteration are probably eliminating large areas of essential habitat. Most impacts appear to affect quality of foraging habitat rather than areas immediately surrounding nesting colonies. The Florida Fish and Wildlife Conservation Commission and the Department of Environmental Protection have developed setback distances around wading bird colonies of 330 ft. (100 m) to prevent human disturbance.

Black-crowned Night Heron (*Nycticorax nycticorax*) - This resident heron has been observed foraging along the shorelines of the ONA. This species is an opportunistic forager, feeding on primarily on fish, amphibians and invertebrates. Adults tend to be crepuscular, feeding during the evening or at night and roosting during the day, often in mangroves. Black-crowned Night Heron are listed as G5/G3 by FNAI;

Little Blue Heron (*Egretta caerulea*) - This wading bird has been observed feeding in the tidal wetland. Little blue herons breed throughout much of North America, Mexico, and Central America and winter from North Carolina southward. It is a Florida resident, and feeds on small fish, amphibians, and invertebrates in both fresh and saltwater systems. Nesting occurs between late February and August in colonies composed only of little blue herons or mixed colonies with other wading birds, mainly at saltwater sites (Kale and Maehr, 1990). Kale and Maehr (1990) considered the general population trend of this species to be downward due to wetlands loss and, possibly, competition with the cattle egret (*Bubulcus ibis*) for nesting sites. The little blue heron is listed as G5/S4 by FNAI; it is not listed by USFWS; it is listed as a species of special concern by FWC.

Tri-colored Heron (*Egretta tricolor*) - This wading bird has been observed feeding in the tidal wetland. The tricolored heron breeds from North Carolina to the West Indies and Central America; it winters from California and South Carolina southward. It is a Florida resident, and feeds primarily on fish in saltwater marshes and swamps, and estuaries; it also feeds in freshwater wetlands. Platform nests are created in mangroves or other dense aquatic shrubs, and eggs are laid from late February through July (Kale and Maehr, 1990). Kale and Maehr (1990) considered this species to still be abundant throughout much of peninsular Florida, but suffering population declines due to wetland losses. The tricolored heron is listed as G5/S4 by FNAI; it is not listed by USFWS; it is listed as a species of special concern by FWC.

White Ibis (*Eudocimus albus*) – This resident wading bird is not known to breed on the site but forages along the shorelines, wetlands and park areas for primarily crustaceans, but also fishes, frogs, small snakes, slugs, snails, and insects. White Ibis is listed as G5/S4 by FNAI; it is not listed by USFWS; it is listed as a species of special concern by FWC.

Osprey (*Pandion haliaetus*) – This resident diurnal raptor feeds exclusively on fish and is common within the ONA, feeding in the tidal wetlands and adjacent waterways. Osprey are often found roosting in the taller mangroves and snags surrounding the tidal wetland. Ospreys typically build large stick nests both on living and dead trees, but also will use numerous man-made structures including telephone poles, wharf pilings, windmills, microwave towers, chimneys, and channel markers. Nesting typically occurs in winter and early spring in Florida and Mexico. The number of young successfully fledged increases with increased abundance of food resources, and large numbers may nest in a relatively small area when food resources are adequate and nesting sites are plentiful. Osprey nests are often used in successive years. Osprey is listed as G5/S3/S4 by FNAI; it is not listed by USFWS; it is listed as a species of special concern by FWC.

Merlin (*Falco columbarius*) - This falcon is a winter visitor to south Florida, nesting in northern U.S. and Canada. Populations tend to be increasing after declines related to pesticide pollution, which is still an issue in South and Central America. In south Florida this species utilizes a wide range of habitats and could be expected to roost and forage across most of the ONA where it hunts predominately song birds. Merlin is listed as G5/S2 by FNAI; it is not listed by USFWS or FWC.

Royal Tern (*Sterna maxima*) – Although the ONA does not provide the open sandy beaches that provide typical nesting habitat for this species, Royal Tern could utilize the adjacent waterways to forage for small fish. Royal tern is listed as G5/S2 by FNAI; it is not listed by USFWS or FWC.

Painted Bunting (*Passerina ciris*) – Although not expected to nest within the ONA, the eastern population of painted buntings winters in southern Florida. Wintering Painted Buntings utilize a wide variety of habitats including shrub/scrub habitats and riparian thickets foraging for grass seeds and insects. Painted Bunting is listed as G5/S3 by FNAI; it is not listed by USFWS or FWC.

Florida scrub lizard (*Sceloporus woodi*) – This lizard is found in Florida scrub habitat in four disjunct populations in Florida. Scrub lizards have limited ability to move between scrub remnants because of their very specific habitat needs. Predation of females in these small populations may be an issue. Scrub lizards are largely restricted to evergreen oak scrub and young sand pine scrub with ample open space for nesting, basking, and foraging in close proximity to mature trees (*Pinus* or *Quercus*) that can provide shade and perch sites. Development of a closed canopy (e.g., in the absence of fire) results in increasingly unsuitable habitat. It never occurs in non-xeric sites. The species is mostly terrestrial but commonly perches low on tree trunks.

West Indian manatee (*Trichechus manatus*) - The Indian River Lagoon and Loxahatchee River bordering the ONA are designated critical habitat for West Indian manatee. Manatees are frequently observed in

the area and have been documented within the constructed tidal lagoon. The species ranges from North Carolina southward into the West Indies, and along the coasts of the Gulf of Mexico. Manatees are vegetarians and feed primarily on sea grasses. Repeated dredging and high boat traffic have prevented the establishment of any significant amount of sea grasses in the Intracoastal Waterway. Consequently, manatees primarily use the ICW as a transit route between the Indian River and Lake Worth Lagoons. They are protected by the Florida Manatee Sanctuary Act (§370.12(2), Florida Statutes) and are federally protected by both the Marine Mammal Protection Act and listed as endangered by the USFWS. The West Indian manatee is listed as G2/S2 by FNAI and is listed as endangered by FWC.

Figure 11. Brown Pelican

**d. Special Status Plant Species**

Eight plant species and one lichen species recorded at the ONA have been listed by at least one of the following governmental agencies or nonprofit environmental organizations: U. S. Fish and Wildlife Service (USFWS); Florida Department of Agriculture and Consumer Affairs (FDACS); and Florida Natural Areas Inventory (FNAI).

Curtiss' milkweed (*Asclepias curtissii*) - This endemic perennial forb is found in open sandy patches in the sand pine scrub community and in the disturbed scrub edge community. Because of the small size and inconspicuous appearance of this plant when not in bloom (Ward 1978); individuals in open sandy trails are often the only ones spotted, even though additional plants may be present in more vegetated areas. Management recommendations include maintaining open sandy habitats and by routing foot trails away from known plant locations. Curtiss' milkweed is listed as endangered by FDACS.

Figure 12. Curtiss' milkweed

Four-petal pawpaw (*Asimina tetramera*) – This long-lived shrub is associated with scrub habitats and has a very limited distribution. There are currently approximately 1,300 individuals in 17 scattered populations across a 30-mile stretch of coastal scrub habitats in Martin and Palm Beach Counties, with just 7 populations containing 100 or more plants. Most of these populations are thought to be reproductively isolated from each other, which may be limiting genetic diversity and recruitment, as outcrossing is the primary breeding system for this species. Seedling recruitment is low or non-existent at most sites. The Jupiter Inlet population is typical in this regard with only 4 naturally occuring plants and no known recruitment in the last 15 years. The U.S. Fish and Wildlife Service Recovery Plan outlines the need to introduce/augment populations of this species to help prevent its loss. The Jupiter population was augmented in December 2008 when 134 one-year old pawpaw were planted north of Beach Road in a management block burned in January 2008. These plants will be maintained on drip irrigation with watering decreasing until established. Future management recommendations include periodic burning to promote the robust growth and flowering needed to produce viable fruit, and additional planting. Four-petal pawpaw is listed as G1/S1 by FNAI and as endangered by both the USFWS and FDACS.

Figure 13. Four-petal pawpaw

Figure 14. Young planted four-petal pawpaw

Perforate lichen (*Cladonia perforata*) - This endemic ground lichen is particularly prevalent in areas of open sand in mature scrub habitat south of Beach Road. Although dependent on fire maintained habitats, this species is intolerant of fire and recolonizes slowly from open sandy patches or other areas excluded from burns. Studies have shown that it may take twenty years or more for the species to recolonize adjacent burn areas. Efforts are underway to determine if transplants within the Outstanding Natural Area can be used move vulnerable lichen to recently burned areas to expand this population and broaden its distribution within the ONA. Management recommendations include eliminating the potential for trampling and litter, maintaining open sandy areas, and eliminating invasive plant species. Perforate lichen is listed as G1/S1 by FNAI and as endangered by both the USFWS and FDACS.

Figure 15. Perforate lichen

Large-flowered rosemary (*Conradina grandiflora*) - This endemic shrubby mint was recorded at Juptier Inlet by Ecological Consultants in 1995. Wunderlin (1998) listed it as occasional in the central peninsula of Florida along the east coast. It was listed as a scrub indicator species in the Treasure Coast Region by Fernald (1989). Large-flowered rosemary is listed as G3/S3 by FNAI and threatened by FDACS.

Nodding pinweed *(Lechea cernua*) - This endemic forb is relatively common in open sandy sparsely vegetated areas in the oak scrub and disturbed scrub natural communities and tends to be located in areas with past disturbance. It responds very quickly to burning. In 2002 nodding pinweed was estimated at ten times pre-burn numbers (Richardson, 2002). It will be protected by maintaining some open sand within the scrub community and also by routing foot trails away from known plant locations. Because this plant is often interspersed with opportunistic weeds such as natal grass, it is particularly vulnerable to unintentional damage during herbicide applications. Nodding pinweed is listed as G3/S3 by FNAI and threatened by FDACS.

Wild pines (*Tillandsia* spp.) - Four species of wild pines have been recorded at the Jupiter Inlet Natural Area. The four species of epiphytic bromeliads include the banded wild pine (*Tillandsia flexuosa*), giant wild pine (*Tillandsia utriculata*), reflexed wild pine (*Tillandsia balbisiana*), and common wild pine (*Tillandsia fasciculata*). Giant wild pine and reflexed wild pine are susceptible to the feeding activities of an imported bromeliad weevil that burrows through the central growing point of the plant. The burrowing can cause the growing point to die, which usually leads to the eventual death of the entire plant (Frank 1999). There is no known practical treatment for this bromeliad weevil, and it is not known to kill all the bromeliads in a given population. Banded wild pine and reflexed wild pine are listed as threatened by FDACS. Giant wild pine and common wild pine are listed as endangered by FDACS.

Figure 16. Giant wild pine at Jupiter Inlet

**e. Non-native Plant Species**

A total of 38 exotic plant species were recorded at the Jupiter Inlet Natural Area during initial inventories completed in 1995 (see Appendix C). Of these, 13 species have been shown to have the capacity to invade and disrupt native plant communities according to the Florida Exotic Pest Plant Council. These are Brazilian pepper (*Schinus terebinthifolus*), Australian pine (*Casuarina equisetifolia*), rosary pea (*Abrus precatorius*), Surinam cherry (*Eugenia uniflora*), sword fern (*Nephrolepis cordifolia*), Chinese tallow (*Sapium sebiferum*), woman's tongue tree (*Albizia lebbeck*), guava (*Psidium guajava*), natal grass (*Rhynechelytrum repens*), laurel fig (*Ficus microcarpa*), schefflera (*Schefflera actinophylla*), torpedo grass (*Panicum repens*) and seaside mahoe (*Thespesia populnea*). Since the initial invasive plant species survey completed in 1995 on the land originally returned to BLM management, tropical signal grass (*Urochloa distachya*) has also been observed on the property (Michael Renda pers. com.).

**f. Non-native Wildlife Species**

The following non-native wildlife species have been recorded within the ONA.

Curly-tailed lizards (*Leiocephalus carinatus)* – This species is a native of the islands of the Bahama Bank were imported in the 1940s, when twenty pair of curly-tailed lizards were brought to the island of Palm Beach. Within 20 years, they had spread 20 blocks. By 1968, researchers discovered that the lizards had spread to the mainland. A survey in September 2002 documented relatively contiguous occurrences along the Atlantic coastline from Lighthouse Point, Broward County to Hobe Sound, Martin County (Smith et al. 2004). There is documentation of this carnivorous lizard taking another exotic, the brown anole (*Anole sagrei*), and of shifts in populations of this species toward more arboreal habitats because of the curly-tailed lizard (Callahan (1982:51). This species is typically found in association with buildings or disturbed sites, however, there is concern that this species could displace or predate native species, including the scrub lizard (*Sceloporus woodi*).

*Brown anole (Anole sagrei)* – This species is a native to Cuba, the Bahamas, and nearby islands. The range of the brown anole in the eastern United States includes all of peninsular Florida (SREL).

Domestic cat – Cats have the potential to be serious predators of nesting birds, including the Florida Scrub Jay, as well as reptiles, Florida scrub lizard, and the Florida mouse.

**3. Cultural Resources**

Jupiter Inlet lies within the Atlantic Coastal Ridge which extends from entire north-south span of Palm Beach County along the eastern coast. Of the various ecosystems found within this important physiographic feature the Coastal Dune and Strand ecosystem, with ocean-facing dune slopes, tropical hammock, Florida scrub oaks and sand pines made an ideal spot for human settlers, both prehistoric and historic.

**a. Prehistoric Periods (10000 B.C. – 1750 A.D.)**

Recent discoveries of fiber tempered pottery shards dating to c 4,000 BCE at the site and across the inlet indicate occupation by people of the Late Archaic Period. Fiber tempered pottery, the oldest ceramic technology in the New World, was made by mixing clay with fibers from saw palmetto or Spanish moss before firing. This invention enabled early people to store food, cook stews and likely contributed to more permanent settlements, rather than the semi-nomadic lifestyle of earlier natives who may have used the site seasonally, but lived further up the Loxahatchee River.

The following information details a tentative and general chronology of the East Okeechobee Area for Florida Native American cultural periods:

**Paleo Period (10000 B.C. – 8000 B.C.)**

Paleoindians lived in southern Florida in association with mammoths, bison and other types of megafauna. Deposits of fossilized Pleistocene bone have been uncovered by dredging operations from several locations in Southern Florida and from solution holes in south Dade County. These deposits indicate a presence of more extensive grasslands than present day. With the extinction of the megafauna by about 11,000 B.P., Paleoindians apparently adapted to the emerging wetlands of southern Florida, and began to establish the patterns of subsistence that were to provide the basis of resource procurement for the subsequent 10,000 years. Evidence of the Paleo period in southern Florida is now well established with the discovery of a late Paleo/Early Archaic sites which have yielded evidence of exploitation of deer and rabbit, some marine fauna, and some indication of hunting extinct horse and peccary. However, the majority of data from sites basically reflect Indian adaptation to the extinction of New World megafauna.

**Archaic Period (7500 B.C. – 750 B.C.)**

Florida archaeologists recognize three temporal divisions for the Florida Archaic: early, middle, and late. Although these divisions have traditionally been based on changes in projectile points and pottery types, new environmental and climatic data and increased knowledge of artifact assemblages and site types are now also used for dividing the Archaic (Milanich, 1994).

*Early Archaic (7500 B.C. to 5000 B.C.)*

To date, only a few sites are known in southern Florida that contain Early Archaic components. Other southern Florida sites from this time period may as yet be unidentified. If such sites are found they would be expected to be ancient cenotes or sinkholes which served as ponds or waterholes in the past (Milanich, 1994).

*Middle Archaic (5000 B.C. to 3000 B.C.)*

During the Middle Archaic more and larger areas of surface water were present in southern Florida. However, most known habitation sites are again located around ancient hydric sinkholes or around similar features, which would have been good sources of water in the past. One extremely interesting culture trait that seems to be peculiar to the Early and Middle Archaic of southern Florida is the mortuary pond. Preservation of organic materials from these pond burials is excellent because of the anaerobic condition of the ponds and the mucky soils that underlie them. Middle Archaic village middens are or were once located on the edges of these mortuary ponds.

*Late Archaic (3000 B.C. to 750 B.C.)*

By 3000 B.C., the climate and environments of Florida had reached essentially modern conditions. This allowed for a regionalization of cultures as individual societies throughout Florida developed adaptations specific to their local environments (Milanich, 1994). During the Late Archaic, the first pottery was produced by the aborigines of Florida. The development of ceramics is important as it suggests that the peoples of this time had adopted a more sedentary lifestyle.

In southern Florida, two separate Late Archaic cultures can be identified archaeologically: the Orange culture and, for lack of a better term, the Glades Archaic culture. The Orange culture is known primarily from northeast Florida, including both the Atlantic coast and the St. Johns River drainage. The Orange peoples made a distinctive fiber tempered pottery. Site types are generally oyster and coquina shell middens along the coast and freshwater pond snail middens along the inland river sand stream. Some coastal shell rings have also been observed (Newman and Weisman, 1992). The Joseph Reed Mound (8MT13) on Jupiter Island may represent the remains of one of these Orange settlements. Although the

Reed Mound has been damaged by storm surges, it was once probably a shell ring made up mostly of oyster shell. In this respect it seems quite similar to other Orange period shell rings located farther north (Newman and Weisman 1992).

The other Late Archaic culture, referred to as the "Glades Archaic," also was present in southern Florida and probably had only limited ties to the Orange culture. The presence of this culture is suggested by numerous non-ceramic bone middens now recognized as being present on almost all interior tree island or former tree islands and marshes or former marshes in southern Florida. Faunal remains from these sites are all dominated by freshwater species, such as turtle, fish and pond apple snail, which could have been easily obtained from the marshes that once surrounded most of these sites.

The fact that these sites are non-ceramic suggests that they represent short-term hunting camps occupied temporarily by coastal inhabitants, or that they date to earlier mid-Archaic times. The extreme densities of some of these sites argue against tree islands as communities date back no farther than 5000 B.P., or 3000 B.C. (Kremer and Spackman, 1981).

The Glades Archaic is postulated as being a culture that was well adapted to life within that newly formed interior wetland of the Late Archaic. This adaptation was so complete that Glades Archaic peoples were able to remain relatively unchanged for over 2000 years.

**b. East Okeechobee Period (Ca. 750 B.C. to 1750)**

The recent research conducted by Florida Atlantic University makes it clear that previous chronology is not useful for the East Okeechobee Area. Therefore, a new chronology, specific to this area, is proposed. It must be noted, though, that the only radiocarbon dates recorded in the area have come from Jupiter Inlet I (8PB34) and the following chronology is based mainly on sites in the Jupiter area. Thus, the chronology will be most successfully applied to sites found along the Loxahatchee River.

The *East Okeechobee I period (750 B.C. – ca. A.D. 800)* is characterized by the use of undecorated sand-tempered pottery from the numerous sites recently identified along the upper Loxahatchee River (Kennedy et al., 1991; Kennedy, Jester, Pepe, Sinks and Wernecke 1994; Kennedy, Jester, Pepe, Sinks, Wernecke and Flaherty 1994; Carr, *et al*., 1995), and in basal levels of Jupiter Inlet I (8PB 34) (Kennedy *et al*., 1993). Other types of pottery are absent or make up only trace amounts of total assemblages from this period. It is important to note that the transition results from the Glades Archaic rather than from the Orange culture.

As with the Glades Archaic, sites seem to be concentrated in the interior wetlands rather than on the coast. However, the upper Loxahatchee River sites seem to demonstrate that, unlike the earlier Glades Archaic, East Okeechobee I sites may be found along the upper reaches of river and streams in the area. These sites probably represent camps that were occupied seasonally and not located in exactly the same place every year. This would explain the extended length and unevenly distributed middens of most of the upper Loxahatchee sites. Coastal sites such as Jupiter Inlet I were probably occupied seasonally as well during this time.

The *East Okeechobee II period* (800 A.D. – 1000 A.D.) This relatively short period is marked by the appearance of St. Johns Plain ceramics as documented at Jupiter Inlet I (8PB43) and Suni Sands (8PB7718). The noticeable lack of St. Johns ceramics (a soft "chalky" plain or sometimes incised ware) in the interior sites testifies to a change in settlement patterns for the East Okeechobee II. It appears that permanent settlements in this period were concentrated along the coast for the first time (excepting earlier Orange settlements).

Perhaps from about A.D. 950 to A.D. 1200, Jupiter Inlet I (8PB34) provides the radiocarbon date for the beginning of the next period, *East Okeechobee III*. The marker type for this period, St. Johns Check Stamped, makes its first appearance at about A.D. 1000. No date on the first appearance of this type has been obtained from the Spanish River Complex, but it may very well appear somewhat later, perhaps at around A.D. 1200, as it does in the rest of southern Florida. In all parts of the East Okeechobee Area though, this period is marked by a substantial increase in the St. Johns ceramic series, until St. Johns Plain and St. Johns Check-Stamped eventually become the dominant types. This can be seen at the Riviera Site (8PB30) (Wheeler, 1992). Before the St. Johns series becomes dominant in the Boca Raton area though, the increase in Sand-tempered Plain and decrease in Belle Glade Plain continues, so that, for a while at least, both the amounts of Sand-tempered Plan and the St. Johns wares are increasing simultaneously. This period ends with the appearance of European goods. A tentative date in line with other areas in southern Florida for sustained European contact is A.D. 1500.

Therefore, the next period, *East Okeechobee IV*, is marked by essentially the same ceramics as the previous period except that this period has the addition of European goods. The St. Johns series is dominant and the Riviera Site (8PB30 suggests that St. Johns Check-Stamped may actually be the most dominant ware. The tribe encountered in the East Okeechobee Area by Europeans at this time was called the Jeaga. It is possible that the Jeaga were under the political dominance of the Calusa, and tribe centered on the southwestern coast of Florida (Fontaneda in True, 1945). However, the large amounts of St. Johns pottery and other artifacts from the Indian River and St. Johns Areas in the East Okeechobee Area during this time suggest dominance by these northern areas instead.

It has been estimated that there were about 20,000 Indians in south Florida when the Spanish arrived (Milanich and Fairbanks, 1980). By 1763, when the English gained control of Florida, that population had been reduced to several hundred. These last survivors were reported to have migrated to Cuba with the Spanish (Romans, 1962), however, it is likely that the so-called "Spanish Indians" (Sturtevant, 1953), who raided Indian Key in 1840, were the mixed-blood descendants of the Calusa and/or refugees from north Florida missions raided by the English in the early eighteenth century. The Spanish-Indians joined the Seminoles, who had fled en masse into south Florida in 1838 after the Battle of Okeechobee, although some Creek groups apparently had migrated to south Florida earlier in the century.

**c. Historic Period (1750 A.D. – 1900 A.D.)**

Historic Period

It is believed Ponce de Leon sailed into the Jupiter Inlet in 1513, planted a cross at a fork in the river and declared it the Rio de la Cruz. Thus began the European Contact Period in Jupiter. Spanish contact with the local Jobe tribe occurred primarily due to shipwrecks and strandings. The *San Miguel Archangel* wrecked off the inlet in 1659, and upon discovery in 1987, 11 cannon from the ship were temporarily stored in the water under the Coast Guard dock. Later accounts of Jonathan Dickinson's capture in 1696 by the Jobe Indians on Jupiter Island provide remarkable, though culturally biased, information. The DeBraham's map of 1763 (the year the last 200 original Native Americans were shipped to Cuba by the Spanish) indicates an English settlement or plantation (known as Grenville) may have been located at the site. The archaeology done at the lighthouse during restoration in 2000 unearthed English artifacts dating to that period. The recent recovery of British Period artifacts from the inlet by treasure salvors may also corroborate this brief era.

Numerous Seminole sites have been documented along the Loxahatchee River, including locations of two Second Seminole War battlefields and Fort Jupiter. Delays in the construction of the Lighthouse in the late 1850s are attributed to the proximity of Seminoles. Present day Seminoles from the Brighton

Reservation relate stories of their ancestors removing bricks from the lighthouse construction site during times when the workers left to avoid them, as well as the sickness-bearing mosquitoes. Early Lighthouse keepers told of regular friendly interactions with local Seminoles and photos taken of Seminoles at the site in the late 1880s attest to their visits.

Figure 17. Jupiter Lighthouse Station showing 1860 original keeper's house (far left), the 1883 house built for Head Keeper and Weather Bureau building circa 1910.

The U.S. Light House Service operated the Jupiter Light Station from 1860 until 1939, when the USLHS became the responsibility of the U.S.C.G. By 1883, the Light Station consisted of the Lighthouse, Oil House, two Keeper's Houses and associated buildings, and a dock. In 1887, the U.S. Signal Corps added a wireless telegraph station and one of the first U.S. Weather Bureau stations in Florida, which later moved to Miami to become part of the National Weather Service (NOAA.) In 1905, the U.S. Navy created a cutting-edge wireless radio station, another technological first. In 1907 a windmill and dock were added. By 1938 the Navy had acquired additional acreage and began building a top-secret base, known as Station J, which was operated by 95 Navy personnel and guarded by Marines throughout WWII. During the Cold War in the 1950s, the U.S. Air Force utilized the property for missile tracking. The U.S. Coast Guard has maintained a presence at the site since 1939.

What follows is the successful 1973 Jupiter Inlet Lighthouse nomination to the National Register of Historic Places, recounting the early history of the Lighthouse.

The earliest documentary evidence of Seminole settlement in South Florida is an account by John Lee Williams (1837) describing Snake Warrior's Island at the headwaters of Snake Creek. This site was recently identified as probably being site 8BD1867 in Miramar in southern Broward County.

Seminole Archaeology is a relatively new focus in South Florida archaeology, but recent work has contributed new data. Numerous Seminole sites have been documented along the Loxahatchee River as

well as several U.S. military sites associated with the Seminole Wars including Fort Jupiter and the Loxahatchee Battlefield (Carr *et al*., 2003).

Jupiter Inlet was an important locus of human settlement throughout the Historic Period. The DeBrahams map of 1763 indicates that an English settlement or plantation may have been located at or near the Inlet.

The following historical summary was taken from the successful 1973 Jupiter Lighthouse nomination to the National Register of Historic Places.

In the Annual Report of the Lighthouse Board dated January 30, 1852, a recommendation was made for the construction of "a first-order lens light, with an elevation of 150 feet, near Jupiter Inlet, Florida." A first class light for "the vicinity of Jupiter Inlet, Florida," was authorized by Congress on March 3, 1853, "to serve as a seacoast light and also to guard mariners in approaching the dangerous shoal lying off that point." The sum of $35,000 was appropriated for "preliminary steps ordered to be taken in regard to obtaining title to the proper site, plans to be prepared, etc." Difficulties in constructing the lighthouse were anticipated from the outset, for the authorization stated that "this point being inaccessible for all useful purposes by land and difficult to be reached by sea for want of harbors in its vicinity, some delay may ensue in making the proper site and obtaining title to it. The act of Congress ceding swamplands to this and other states, "without making reservations for light-house purposes, renders this duty complicated and causes delays."

The tract selected in 1853 after an examination of the coast in the Jupiter Inlet area was part of the Fort Jupiter reservation established during the Seminole War period; the Lighthouse Board officially recommended the use of this site. Plans and estimates for the lighthouse were submitted for approval in 1854 or early 1855. The chief of administrative affairs for the Seventh Lighthouse District, which until 1890 included the Jupiter Inlet Light (transferred to the Sixth District in that year), was George G. Meade, then a lieutenant in the Bureau of Topographical Engineers and later a noted Civil War general. According to National Archives documents, the design for the lighthouse was submitted to the Lighthouse Board by Meade but was drawn and designed under Meade's instruction by John W. Nystrem. Construction arrangements until May 31, 1856, the date when Meade's appointment as chief administrator for that district ended, were supervised by Meade. This does not mean that he was constantly in attendance on the site, however; his duties included administering two lighthouse districts (the Seventh and the Fourth) and his office was in Philadelphia. Whether or not Meade actually visited the site while the Jupiter Inlet Lighthouse was under construction is not documented.

61.5 acres of the reservation were reserved by the Executive Order of President Franklin Pierce signed October 22, 1854. (In 1925, a topographical survey indicated that the lighthouse reservation had not been properly located; the new area of the reservation was fixed by Executive Order on June 12, 1925, at 121.95 acres.) All was in readiness for construction to begin, but it would be almost six years before the Jupiter Inlet Lighthouse was ready for operation.

The major reason for this delay was the fact that Jupiter Inlet sanded shut in 1854, forcing the use of an alternative route for transporting building materials to the site. The pattern of opening and closing of the entrance oto the intercoastal waterway areas by drifting sand had often been repeated over the years. The Inlet was open briefly in 1853, but soon reclosed. In 1855, the commander of Fort Jupiter, a Major Haskins, made an unsuccessful effort to open it; however, in the next year Captain Capron of the same installation did open the inlet. For roughly a decade it remained open, but in the period between 1853 and 1856, the problem of access to the lighthouse site was a difficult one.

In spite of the inconveniences presented by the situation, construction of the lighthouse progressed. Supplies had to be sent down the Indian River and Jupiter Narrows, a procedure which involved some overland carriage and lightering of around five hundred tons of construction materials. The expenses mounted and in 1856, Congress appropriated another sum ($19,522.90) for purposes of "continuing and completing the Jupiter light."

Congressional records indicate that little of this new sum was expended in 1857 and 1856; the major expenditures did not come until 1859. The cause of this gap in progress was the hostilities accompanying the Third Seminole War. The Annual Reports of the Lighthouse Board of those years refer to Indian troubles in 1856 and 1857 which continued into the winter working season of 1858. The 1857 Report anticipated that work would begin at the end of 1858 and be completed by 1859; this was not the case. In 1859 work had to be halted because of problems of heat, moisture, and insect molestation. However, the work was completed during the 1859 – 60 working season as was predicted in the 1859 Annual Report. Before the work was finished, more money for the project had to be found; funds totaling $6,336.08 were transferred from balances remaining from appropriations made for other lighthouses. The combined expenditure for the Jupiter Inlet Lighthouse from 1854-1859 amounted to $60,858.98.

The Jupiter Inlet Lighthouse was first placed in operation on July 10, 1860. The events of the Civil War in the area precipitate an action on the part of civilians in the area in 1861. The coast of Florida was patrolled by ships of the U.S. Navy whose duty was to blockade the coast and prevent supply ships from reaching Confederate shores. The Jupiter Inle, which was open at the time, was a useful point of entry for blockade runners. In order to make it more difficult for the U.S. Naval force to apprehend the Confederate supply ships, a group of men from the Jupiter Inlet area, in August 1861, rendered the Jupiter Lighthouse inoperable by removing and carrying away the lighting apparatus so that the light could not be used to aid U.S. Naval pilots on the coast of Florida. The Lighthouse Board Report of that year reported that "lawless persons visited the Jupiter Inlet Lighthouse on the coast of Florida and removed there-from the illuminating apparatus."

The Jupiter Inlet Lighthouse has continued to function since 1866 with its routine activities enlivened by occasionally at sea. A Life Saving Station was established there in 1886, after which rescue activities occurred in the area as would be typical for any coastal lookout and rescue unit. Shipwrecks occurred in the area before and after the Life Saving Station was put into service. During World War II, enemy activities off the Atlantic coast of the U.S. resulted in a submarine alert in which the Jupiter Inlet Lighthouse was involved; American vessels were torpedoed off nearby Hobe Sound in 1942.

The decision to establish a lighthouse at Jupiter Inlet Sound in the 1850's was made as part of a general plan for lighting the Florida reef on the east coast as an aid to commerce and transportation. The determined effort to complete the lighthouse at great cost of effort and money indicates that it was thought to be essential to the protection of naval commerce and transportation in that area. The difficulties which beset the construction of the lighthouse, with the exception of the Indian hostilities which ceased to be a major problem after the Third Seminole War, are illustrative of the kinds of problems continually faced in the development of the south Florida area.

Since so much of the activity in Florida during the Civil War centered on the question of naval control of access by water to Florida, the local civilian action at Jupiter Inlet Lighthouse indicated the degree to which this was a concern to the residents of Florida. The later activities at the lighthouse typify the value of a coastal station to transportation and commerce. All of the points illustrate the significance of the Jupiter Inlet Lighthouse.

## 4. Recreation

Outside of the organized sports associated with Jupiter Lighthouse Park, public recreation facilities are primarily associated with the Loxahatchee River Historical Society's interpretive facilities and docent guided tours. Public visitation to the lighthouse is permitted only as part of a LRHS guided tour. From July 2007 through June 2008, the LRHS provided tours, programs, etc, for 57,394 visitors, which included national and international visitors. During fiscal year 2008, docents and other volunteers donated 5,849 volunteer hours in support of this organization's public outreach, education, facility maintenance and protection mission. LRHS has installed new interior interpretive exhibits which are expected to increase the quality of the visitor's experience and appreciation of the rich history of the ONA. There is a need to extend the visitor's experience along the corridor leading to the lighthouse, incorporate other historic features and include natural history as part of the interpretive message to the public.

There have been increases in public use behind the Station J historic building which houses the LRHS museum. The Town of Jupiter has adopted Palm Beach County's Parks and Recreation Ordinance for its parks. These ordinances apply to the area behind Station J, a midden listed on the Florida Master Site File, although there is need for posting and enforcement to protect historical and archaeological resources from damage resulting from trampling, digging, boat mooring and unauthorized fires. Unguarded swimming poses public safety issues due to the swift current in the inlet and boat traffic.

The other primary recreational use within the ONA is the unauthorized public use along the Indian River Lagoon, discussed under Management issues. This use has occurred for decades, but has contributed to erosion along the bank as people climb the bank and excavate sand caves. Rope swings placed on Australian pine eventually dislodge trees at the top of the sand bank. This bank has lost over 100 feet in the last 50 years. The adjacent Indian River Lagoon is well known for its high water quality during incoming tides and provides excellent snorkeling and swimming opportunities, but very swift currents and high boat traffic are issues for public safety. The adjacent waterway is a No Wake zone south of Kato Bridge.

There is some use by walkers, bird watchers and for geocaching (there were two geocache locations listed on the national web site as of February 20, 2009) within the scrub and hardwood hammock areas of the ONA. These uses tend to be casual and most visitors utilize the existing management road network north of beach road to access the site. There is some kayaking in the tidal lagoon.

Figure 18. Vistors returning from lighthouse tour.

## 5. Visual Resources

The ONA is rated as a Visual Resource Management (VRM) Class III zone.. The objectives for this zone are to partially retain the characteristics of the natural landscape. Actions can be noticeable but should not dominate the view of a casual observer. The VRM class applies to BLM actions on the public domain lands within the ONA, which includes lots 15, 17, and 19. The class is based on the characteristics of the form, texture, and color present in the landscape, the scarcity of those characteristics in the region, and the amount and nature of manmade change to the natural landscape, as seen from the most commonly visited locations on the site or in the surrounding area. For the ONA, these observation points are traveling north or south on US 1, where the property is visible for about 0.25 miles, and east and west on Beach Street for

approximately 0.4 miles, on the several public access points across the Indian River, and from recreational boats on the Indian and Loxahatchee Rivers for about .7 miles total, and from the top of the lighthouse itself. From the observation points, the scrub habitat is the most prominent, appearing as fairly long stretches of green 3-6 feet tall along the roadsides, with small areas of pines 10-30 feet tall. Along the waterways, the dense mangrove stands present a wall of green to recreation boaters. Depending on tides their interesting buttress roots are occasionally visible. Iconic views of the lighthouse are from the public access points along the Loxahatchee and Indian Rivers looking north. A common theme from all the observation points is that the site represents an oasis of green vegetation and white sands which provides a variety and relief from a boat or vehicle trip through dense bit tidy commercial and residential neighborhoods along the coast of Palm Beach County. Over the years however, the non-native Australian pines near the lighthouse in lot 17 have reached a height where they are beginning to compete vertically with the dominance of the lighthouse over the site.

Figure 19. Looking northeast across the Loxahatchee River.

## E. Current Management Strategies

### 1. Weed Management

The ONA is designated a Cooperative Weed Management Area to facilitate collaborative efforts between agencies across administrative boundaries to control non-native, invasive plants; this includes Jupiter Lighthouse Park and the U.S. Coast Guard properties. The weed program within the ONA uses an integrated pest management program to restore native plant communities, including mechanical and hand removal, prescribed burning, the targeted application of approved herbicides, and native plantings. On BLM administered land weed control is conducted under a Pesticide Use Proposal, which addresses the specific herbicides and adjuvants to be used and the application methods and timing related to the use of those materials. These Pesticide Use Proposals are prepared every three years and require agency review and approval. The current pesticide use proposal was approved on August 8, 2008 and will expire on August 7, 2011. A copy of the current Pesticide Use Proposal is included in the Appendix.

### 2. Prescribed Burn Program

The prescribed burns at Jupiter Inlet have been conducted under a prescribed burn plan developed as part of the initial management plan in 1996. That burn plan was developed to restore a more natural fire regime to the fire dependent scrub communities at Jupiter Inlet where fire had been excluded for at least 60 years. The prescribed burn objectives were to improve wildlife habitat, and reduce hazardous fuel loads. To accomplish those objectives, the scrub areas north of Beach Road were divided into seven blocks (5.8 to 1.5 acres) to be burned incrementally over eighteen years. An additional two blocks were identified south of Beach Road where only mechanical manipulation would be used. To date three burns have been completed totaling 17.3 acres or 34 percent of the 51 acres of the intact scrub acreage within the ONA. The 2004 hurricanes drastically altered the sand pine stand at Jupiter Inlet killing most of the mature sand pine and substantially modifying the fuel loads within the ONA. An updated burn plan is needed to address the current resource objectives.

### 3. Research

There is a biological research permit system in place for the ONA. Appropriate state and federal permits are required to work on listed species, and projects are coordinated with U.S. Fish and Wildlife Service and the State, if there is a potential to affect listed species or their habitat.

The Bureau of Land Management issues Cultural Resource Use Permits in order to authorize cultural resources studies or research, for compliance with the National Historic Preservation Act, as amended, and for compliance with the Archeological Resources Protection Act (ARPA), and to authorize paleontological research. When specific projects are proposed, applicants who already possess a Cultural Resource Use Permit must also obtain a Field Use Authorization. When a proposed project involves ground disturbing work at an archeological site the project must be reviewed by the State Historic Preservation Office before work begins.

## F. Existing Facilities and Easements

### 1. Facilities

#### a. Fencing

Fencing has been installed along the perimeter of the area north of Beach Road, security fencing around the Coast Guard managed areas and along the eastern border of the soccer fields.

North of Beach Road the perimeter of ONA is delineated with a two rail, three-foot high split-rail fence (totaling 3,898'). Behind the residences on the northern boundary 1,096' of the split-rail fence has been backed with 4-inch square hog wire. A total of 284' of 6' green chain link fence has been placed behind commercial property in the northwestern corner of the property. There is a 15' long steel swing gate on the northern access road off Beach Road. These facilities were installed in 1997 and continue, with occasional maintenance, to be serviceable.

There is a 4x4 fence along the eastern boundary of Lighthouse Park ball fields. This fence has worked well to visually separate the ball fields from the natural area to the east, but it does not exclude stray balls or trash. The fence also does not exclude public access to adjacent areas supporting perforate lichen (*Cladonia perforata*), federally listed as endangered, a ground lichen which is difficult for a lay person to identify and highly susceptible to trampling.

The Coast Guard managed properties are surrounded by a chain link fence with gates off Beach Road, the post exchange and adjacent to the Loxahatchee River Historical Society/Museum. The communication site north of Beach Road is also fenced in chain link, portions of which are in need of maintenance.

#### b. Trails

Outside of the paved path to the Jupiter Inlet Lighthouse, there are no developed or designated trails within the ONA. North of Beach Road the management roads, which also serve as fire breaks for the prescribed burn program, provide access through the area. These fire breaks/management roads provide no interpretation or directional signage for the visiting public.

#### c. Parking

Public parking within the ONA is currently available only at Lighthouse Park and in front of the Loxahatchee River Historical Society/Museum (Station J Building). There are approximately 50 parking spaces available at the entrance to Lighthouse Park, another 100 in front of the Loxahatchee River Historical Society/Museum (Station J Building) and 113 combined along the soccer fields. This parking capacity is generally exceeded on Saturdays during soccer season.

There is no parking available for the portion of the ONA north of Beach Road and visitors must either leave their car at Lighthouse Park and cross Beach Road (no designated crosswalk) or park outside the gate off Beach Road. There is considerable traffic traveling from both directions of Beach Road to Jupiter Island and visibility is obscured by a slope rising to the east creating a potential hazard for the public entering and leaving this undesignated parking area.

#### d. Roads

The only public road in the ONA is Captain Armour Way; a paved county maintained road providing access to Jupiter Lighthouse Park and the Loxahatchee River Historical Society/Museum. The other roads include a loop road into the U.S. Coast Guard housing and Post Exchange, and an asphalt road to the U.S. Coast Guard communication site on the north side which branches inside of the compound. The sand management roads on the north side are open for agency use only.

**c. Station J**
This historic WWII vintage building originally served as married officer's housing. The building was included in lands patented to the Town of Jupiter in 2004. Restored in 2006 after heavy damage by the 2004 hurricanes, the building now houses the Loxahatchee River Historical Society Museum, gift shop, and Jupiter Lighthouse tour office on the first floor, and administrative offices upstairs. The LRHS leases the space from the Town of Jupiter.

**d. Jupiter Inlet Lighthouse**
Still an active aid to navigation, this iconic lighthouse is on withdrawn public domain land managed by the U.S. Coast Guard. The Loxahatchee River has a lease agreement with the U.S. Coast Guard to maintain the lighthouse tower, oil house and associated property. The lighthouse underwent an extensive restoration from 1999-2000.

**e. Coast Guard housing**
There are eleven U.S. Coast Guard houses, plus outbuildings, in Lot 18 east of Jupiter Lighthouse Park ball fields. This housing is used by families of active service members.

**f. Lighthouse Park**
This 17.8 acre park provides ball fields, tennis courts, a shelter, parking, and restrooms.

**g. Communication Site**
This 4.89 acre tract (Lot 16) is in the center of the property north of Beach Road. The tract is public domain withdrawn for use by the U.S. Coast Guard as a remote unmanned high frequency radio communication site which services U.S. Coast Guard installations in Miami and Key West.

**h. ONA Signs**
The Jupiter Inlet Natural Area sign off Beach Road is obsolete and should be replaced as part of the coordinated signing program for the new ONA.

**2. Easements**

The following right-of-ways have been recorded within the ONA

- Easement deed dated October 11, 1955, filed December 8, 1955, and recorded in Deed Book 1117 at page 156, an easement to the State of Florida for the use and benefit of the State Road Department for the purposes of relocating, widening, constructing and maintaining a portion of State Road 5 (U.S. Highway 1).

- Easement deep dated January 31, 1958, filed on March 18, 1958, and recorded in Official Record Book 169, page 585, an easement to the State of Florida for the purpose of relocating, widening, constructing and maintaining a portion of State Road 5 (U.S. Highway 1).

- Easement deed dated October 19, 1967, filed on November 9, 1967, and recorded in Official Record Book 1614, page 131, to DiVosta Construction Company, an easement for a six inch sanitary sewage force main from the island portion of the Village of Tequesta, Florida to the sewage main along U.S. Highway 1. (Assigned to the Loxahatchee River Environmental Control District on July 16, 1980)

- Easement deed dated December 19, 1967, filed January 16, 1968, and recorded in the Official Record Book 1634, page 529, an easement to the State of Florida for the purpose of relocating, widening, constructing, and maintaining a portion of State Road 707.

- Easement deed dated March 16, 1979, and recorded December 4, 1979 and recorded in the Official Record Book 3187, page 215, to the State of Florida for the purpose of widening, construction and maintenance of State Road ALT A-1-A.

## G. Adjacent Land Uses

The ONA is located in an urban setting and straddles the border between the Town of Jupiter and the Village of Tequesta. U.S. Highway 1 is on the western border and the area west of Highway 1 is zoned commercial with retail, restaurants and office buildings. The northwest corner is also bordered by commercial property. The residential community of Coconut Cove borders the ONA on the northern boundary. Beach Road, which bisects the ONA, provides the major access to the Jupiter Inlet Colony and the southern reaches of Jupiter Island across Kato Bridge, a manned drawbridge. The ONA is bordered on the south and east by the Indian River Lagoon and the Loxahatchee River. The residential community of Jupiter Inlet Colony lies to the southeast across the Indian River Lagoon. Dubois County Park is located across the inlet to the southeast and commercial properties, primarily restaurants, are located immediately to the south across the Loxahatchee River.

## H. Socio-Economic Conditions

The Town of Jupiter has grown from a small village at the turn of the century where employment was focused on agricultural/fishing and tourism, to an incorporated township in the 1920's, to a bedroom community in the post World War II era. Recent growth has been tremendous with the population expanding from 9,868 in the 1980 census to 44, 087 in 2003 and is projected to be 53,849 by 2010. Much of this growth is related to the increase in bio-technical facilities, such as the Scripps Institute, locating in the area. The incorporated area totals 23.53 sq. miles. Racial demographics in the Town of Jupiter in 2000 were Caucasian (94.9), Hispanic (7.3%), Other (2.5%), African American (1.2%), Asian (1.1%), and American Indian (.02%). The median age is 42.4, with almost 19% being over the age of 65. Over 34% of the population has a bachelor's degree or higher.

The Village of Tequesta was incorporated in 1957 and occupies 2.28 square miles. The population as of April 1, 2008 was 5,898, according to the University of Florida's Bureau of Economic and Business Research. The Village is over 95% developed and does not anticipate significant population growth. Tequesta is a bedroom community with 38% residential housing and 38% residential canals, water bodies, recreation and open space. Route U.S. Highway 1 is a commercial corridor that runs through it, connecting the Town of Jupiter to the south and Martin County to the north. The corridor supports almost all of Tequesta's 5% commercial uses, along with Cypress Drive South and the Village Center. Racial demographics in the Village of Tequesta in 2000 were 97.97% White (95.8% were Non-Hispanic White,) 0.47% African American, 0.09% Native American, 0.70% Asian, 0.02% Pacific Islander, 0.13% from other races, and 0.61% from two or more races. Hispanic or Latino of any race were 2.43% of the population. The median age is 47.5, with almost 27% being over the age of 65. Over 36% of the population has a bachelor's degree or higher.

## I. Nearby Destinations

Northern Palm Beach County has a wide variety of managed natural areas and parks. The following are examples of sites within five miles of the ONA.

- Jupiter Ridge Natural Area is managed by Palm Beach County Department of Environmental Resources Management as part of its Natural Areas Preserve System. The 271-acre site is primarily scrub and depression marsh, and has a parking area, bike racks, interpretive kiosk, 2.5 miles of trails and boardwalks, and an overlook.

- Juno Dunes Natural Area is managed by Palm Beach County Department of Environmental Resources Management as part of its Natural Areas Preserve System. The 576-acre site is split between a western scrub dominated site and a 42-acre oceanfront section that includes a maritime hardwood hammock. The preserve offers an accessible nature trail, bike rack, interpretive kiosk, overlook and hiking trails. This site will soon provide boater access day dockage with an observation tower and picnic tables.

- Delaware Scrub Natural Area, totaling 15.8 acres, was a collaborative purchase by the Town of Jupiter and Palm Beach County completed in 2005. The site is managed by Palm Beach County Departement of Environmental Quality as part of its Natural Areas Preserve System. The site contains upland scrub and scrubby flatwoods habitats, and one of the county's few cypress swamps. There are no public use facilities yet at this site.

- Limestone Creek Natural Area is owned and managed by Palm Beach County Department of Environmental Resources Management. It is currently comprised of 22.8 acres of county owned lands north of the C-18 canal, and a long-term management least over an additional 30 acres is pending. The site contains four native ecosystems: mesic flatwoods, scrubby flatwoods, hydric hammock, and tidal swamp.

- The Nature Conservancy manages the 73-acre Blowing Rocks Preserve on nearby Jupiter Island. The site spans this barrier island and includes the Atlantic Ocean's largest formation of Anastasia limestone formation with exposed rock consists of coquina shells, other seashells and sand for which it was named. It also includes mangrove shoreline along the Indian River Lagoon. Facilities include an interpretive center, trail, and wetland boardwalks.

- Dubois Park is located south of Jupiter Inlet and is managed by Palm Beach County Parks. The 18.69- acre park includes guarded swimming areas, saltwater fishing, and picnicking. A sheltered snorkeling area has been proposed.

- Riverbend Park is a regional park located west of Highway 95. It encompasses 680 acres with five miles of waterways, 15 miles of trails and access roads, canoe and kayak rental and ride-to-only equestrian access.

- The Loxahatchee River District's River Center has a combination of static displays, interactive exhibits, live tanks which trace the Loxahatchee River system from a freshwater cypress swamp to seagrass-dominated estuary to marine ecosystems. The center provides an opportunity for school children, adults, visitors, and long-time residents an opportunity to learn about Florida's first federally designated Wild and Scenic River.

# Part II. Management Guidelines

## A. Mission Statement

The following language, excerpted from the Act, establishes the overall mission for the Jupiter Inlet Lighthouse Outstanding Natural Area.

> "The Secretary, in consultation with the Local Partners and the Commandant, shall manage the Outstanding Natural Area as part of the National Landscape Conservation System in a manner that conserves, protects, and enhances the unique and nationally important historical, natural, cultural, scientific, educational, scenic, and recreational values of the Outstanding Natural Area, including an emphasis on the restoration of native ecological systems."

## B. Purpose and Need

The Act requires that the Secretary of the Interior develop a management plan for the Jupiter Inlet Outstanding Natural Area within three years and that the plan be developed in consultation with appropriate Federal, State, county, and local government agencies, the U.S. Coast Guard Commandant, the Local Partners, and other partners; and in a manner that ensures full public participation.

The following is a summary of those items in the Act which provide specific guidance on management of the ONA and requirements related to this planning effort. For the complete text of the Act see Appendix A.

> The Federal land and any interests in the Federal land included in the ONA are withdrawn from all forms of entry, appropriation, or disposal under the public land laws; location, entry, and patent under the mining laws; and operation of the mineral leasing and geothermal leasing laws and the mineral materials laws.
>
> The management plan shall include objectives and provisions to ensure the protection and conservation of the resource values of the Outstanding Natural Area, including;
>
> Restoration of native plant communities and estuaries in the ONA, with an emphasis on the conservation and enhancement of healthy, functioning ecological systems in perpetuity;
>
> Objectives and provisions to maintain or re-create historic structures;
>
> An implementation plan for a program of interpretation and public education about the natural and cultural resources of the Lighthouse, the public land surrounding the Lighthouse, and associated structures;
>
> A proposal for administrative and public facilities to be developed or improved that are compatible with achieving the resource objectives for the ONA and would accommodate visitors to the ONA;
>
> Natural and cultural resource management strategies for the ONA, to be developed in consultation with appropriate departments of the State, the Local Partners, and the Commandant,

with an emphasis on resource conservation in the Outstanding Natural Area and the interpretive, educational, and long-term scientific uses of the resources;

Recreational use strategies for the Outstanding Natural Area, to be prepared in consultation with the Local Partners, appropriate departments of the State, and the Coast Guard, with an emphasis on passive recreation.

## C. Management Issues

There a number of issues that were considered in the development of this plan, including those raised during the public scoping process, by the ONA Partners, or that were indicated by past management experience at the site. The following provides background on these issues.

- **Public Access to Natural Areas**

Providing for public access to the Outstanding Natural Area was a key issue raised during the public scoping meetings. During the time the site was administered by the U.S. Coast Guard, public access to most of the site was restricted. The community perception lingers that the natural areas of the ONA are not available for public use and it is reinforced by the lack of public access points, trails and sufficient signage. Over the last year the media and community attention on the NLCS designation has generated a sense of public ownership and raised expectations within the communities that access points will be developed. The legislation language provides for passive recreational experiences. The issue is enhancing the public's access and experience on the site with facilities that are compatible with the maintenance and enhancement of the natural and cultural resources for which the area was designated, while meeting security needs of the U.S. Coast Guard residents and facilities.

- **Public Use of the Indian River Lagoon Bluff Area**

There is a long history of public use, albeit unauthorized, along the Indian River Lagoon south of the Beach Road Bridge. The sand bluffs and clear water provide a destination for boaters from across the county and beyond. The site has been popular for decades, in fact it was repeatedly described as a "right of passage" for local kids who installed and used rope swings from trees leaning over the bluff. It is also a popular anchoring spot for people using the shallow beach. Exacerbated by public use, dredging, storms and boat traffic these 20 foot bluffs have been substantially eroded losing over 100 feet of land along this shoreline over the last fifty years. The steep unstable slope currently poses a public safety hazard for persons climbing the bluff and for boaters anchored below. The U.S. Coast Guard, despite limited manpower and personnel, has repeatedly signed and patrolled the area; but without the availability of full-time enforcement or citation authority the problem has overwhelmed their capacity. The issue is how to support the Act's direction to provide for passive recreation while concurrently protecting the resources along the bluff, and reducing the public hazard.

Please note that this plan will only present conceptual alternatives to address this issue. The feasibility of these alternatives will be dependent on an in-depth engineering design being funded by the American Economic Recovery Act during the latter half of this year. This contracted study will develop the alternatives based on objectives outlined in this plan. These alternatives will be presented to the Jupiter Inlet Working Group and to the public for additional comment and coordination. The final design once approved will be amended to this plan.

- **Re-creating Historic Structures**

The Act requires that this plan include objectives and provisions to maintain or re-create historic structures. The objectives will be established to guide future opportunities, including collaborative efforts between the partners to recreate historic buildings for use either by the U.S. Coast Guard, interpretive purposes, or both.

- **Protecting Cultural Resources**

The ONA is estimated to receive over 60,000 visitors year. Providing for this level of visitation, and the expected increases, requires that an infrastructure to protect the historic and prehistoric resources. One vulnerable area is behind the Station J building where a prehistoric midden is exposed to regular foot traffic. The site was capped with additional sand, geofabric and sod in 1998, but the fabric has been exposed and lost in many areas with continuing public use. Another area is at the base of the lighthouse where visitors gravitate to the shade of the hundred year old council fig, which covers the site of the original lighthouse keeper's house. There is a need in this location to provide an area for groups waiting to climb the lighthouse, accommodating those who are unable to climb, while protecting the historic location and reducing the opportunity for climbing the council fig.

Due to the sensitive security issues of past military installations at the Jupiter Inlet Lighthouse ONA, archaeological research has been minimal to date. There is the need for a full archaeological survey and evaluation to understand the extent of the substantial prehistoric occupation and use. This information would guide enhancement and educational projects, as well as contribute significantly to the limited understanding of southeast Florida's original Native Americans.

- **Prescribed Burn Program**

Although fire is the preferred tool in maintaining the scrub habitat characteristics that are needed by most of the special status species occurring in the ONA, the site's urban location requires that prescribed burns be conducted only during a very narrow window of wind direction, wind speed, ambient humidity and fuel moisture levels. Mechanical manipulation of the vegetation, such as chopping or using other heavy equipment, while it does not produce all of the habitat benefits, can mimic some of the affects of prescribed fire without these restraints. The issue is how to balance the use of these methods and where they would be used to meet resource objectives.

- **Invasive Plant Control**

All of the ONA partners have policies or laws that support control of invasive weeds in their areas of responsibility. Jupiter Inlet has been managed in the past as a Cooperative Weed Management Area and collaboration across administrative boundaries has resulted in increased efficiencies. This plan will continue with this coordinated approach. The primary issue raised by the public regarding invasive species issues was the removal of woody invasives in Lot 17. The concern was that the removal of the woody structure would result in loss of wildlife habitat and visual resource impairment. The issue is what options are available to meet the resource objective of removing exotic woody vegetation within the ONA while mitigating these impacts.

- **Interpretive Program**

The Loxahatchee River Historical Society is currently the primary nexus for the visiting public within the ONA. The Lighthouse Museum, housed in the Station J Building. Palm Beach County Department

of Environmental Resources Management has interpretive programs being used in nearby natural areas with similar habitats, primarily through interpretive kiosks and brochures. There is a need to incorporate these existing programs into a cohesive interpretive program addressing the unique combination of cultural, historic and natural resource values of the Jupiter Inlet Lighthouse ONA.

# Part III – Management Practices Standard to All Alternatives

The following management practices are standard for all activities regardless of alternative.

**A. Cultural and Historic Resources**

**1.** Complete cultural resource surveys, analysis, and evaluation of historic properties would be completed prior to surface disturbing activities and monitoring during these activities. This work would be conducted to the standards of the Secretary of the Interior and professional archeology.

**2.** Ongoing consultation with the appropriate federally recognized Native American tribes would be conducted to address any concerns regarding compliance with appropriate laws.

**B. Prescribed Burns**

**1.** All prescribed burning conducted on the Jupiter Inlet tract would comply with BLM Manual 9214 Prescribed Fire Management, Chapter 590, Florida Statues for Forest Protection, Chapter 5I-2, Florida Administrative Code (FAC) for Rural Open Burning, and Chapter 17-256, FAC for Open Burning and Frost Protection Fires. Copies of the BLM regulations may be obtained by contacting the BLM at the address previously shown. Copies of the referenced Florida Statutes administrative codes may be obtained by contacting the Florida Division of Forestry.

**2.** No prescribed burning would be conducted without an approved prescribed burn plan. A Go/NoGo checklist would be completed prior to ignition of the prescribed fire to ensure that all conditions and smoke management considerations specified in the prescribed burn plan have been met.

**3.** The Clean Air Act (as amended) requires compliance with Florida's Air Quality regulations. Compliance with Florida's state or local smoke management laws and regulations would require that close communication be maintained with air quality authorities prior to and during prescribed fire applications.

**4.** Prescribed burning would only be conducted when atmospheric conditions are favorable for rapid smoke dispersion (sufficient transport wind speed, direction and mixing height).

**5.** Prescribed burning would not be conducted if there is a temperature inversion that would prevent smoke dispersion. No burning would be conducted if there is a potential, identified by the Florida Division of Forestry, for smoke to be transported into populated areas.

**6.** The fire management plan includes coordination with adjacent municipalities on all aspects of the operational burn plans, as well as notification and coordination with adjacent landowners and businesses.

1. All burn sites will be hand or mechanically prepared to reduce the standing live fuel loads and all larger diameter fuels will be suppressed following completion of the burn to reduce residual smoke problems.

**C. Herbicide Use**

**1.** The use of herbicides would be done in accordance with the guidance and regulations provided in the Final Environmental Impact Statement Treatment on BLM land in 13 Western States dated 1991.

**2.** Only chemicals approved by the Environmental Protection Agency (EPA) would be used. Of these, there are currently 17 herbicides which can be used according to label requirements on BLM-administered public lands.

**3.** Control of exotic (non-native) plants would be in conformance with the BLM's mandates in the Federal Land Policy and Management Act of 1976 (3 U.S.C. 1700 et seq.); and Management of Undesirable Plants on Federal Lands, 1990; and the Carlson-Foley Act of 1968 (P.L. 90-583), as well as the current BLM strategy plan " Partners Against Weeds, An Action Plan for the Bureau of Land Management."

**4.** Application method would be by hand and backpack sprayers only.

**5.** The use of effective nonchemical methods of vegetation control would be applied where feasible.

**6.** Chemicals could be used where benefits would meet or exceed those of other control methods. The application of chemicals shall meet BLM and EPA label requirements.

**7.** A pre-treatment survey would be conducted to identify target plant species, as well as associated plant species, and proximity to sensitive resources.

**8.** A pesticide application record would be completed. This record documents site conditions at the time of application and initiates monitoring to determine effectiveness of treatment.

**D. Recreation and Visual Resource**

**1.** Placement of signs and fencing on the Jupiter Inlet tract would comply with related ordinances and regulations of the Town of Jupiter, the Village of Tequesta, and the BLM.

**2.** Motorized vehicle use would be permitted only on maintained surfaced roads. The Jupiter Inlet ONA would be closed to off-highway vehicle use. Travel on non-surfaced management roads and all off-road travel would be allowed for emergency or authorized vehicles only.

## E. Vegetation and Wildlife

**1.** No mechanized equipment would be allowed to operate within 25 feet of gopher tortoise burrows.

**2.** Construction of nest boxes, roost sites, and platforms will be incorporated where needed to meet wildlife needs. Suitable snags, that do not pose a public hazard, may also be retained as roost and nest sites.

3. All activities with potential to affect Federally listed species will require the appropriate coordination under the Endangered Species Act with the U.S. Fish and Wildlife Service.

Figure 20. Giant leather fern

# Part IV. Proposed Management Actions

The following section provides the goals and objectives for the future management of the ONA and describes a range of implementation actions to meet those goals and objectives.

A. **Goal: Promote public understanding of the Jupiter Inlet Lighthouse Outstanding Natural Area as a unit of the National Landscape Conservation System.**

1. *Objective: Identify the Jupiter Inlet Lighthouse Outstanding Natural Area as a component of the National Landscape Conservation System and inform the public of the National Landscape Conservation System designation, the mission and purpose of the designation, and the role the ONA plays in this national system* .

Alternative 1

- Install 4' X 8' standard format National Landscape Conservation System portal signs on both the north and south corners of Beach Road and on the west side of Kato Bridge. This alternative would "brand" the new ONA and most accurately identify its full extent.

- Pursue installation of tourist destination signs for the ONA at Indiantown Road north and south I-95 exits to promote the unit and assist visitors. This action would require updating the existing tourist destination signs to include the ONA.

- Use the National Landscape Conservation System designation as a unifying theme for public interpretive facilities and materials, including kiosks, interpretive signage, brochures and exhibits.

Alternative 2

- Install 4' x 8' standard format National Landscape Conservation System portal sign at the north side access point only. This alternative would identify the major northern access point, but would rely on interpretive kiosks in the interior of the ONA to explain the full extent of the ONA to the public.

- Pursue installation of tourist destination signs, same as in Alternative 1.

B. **Goal: Enhance the public experience and access to the natural areas and historic properties of the ONA site with facilities that are compatible with the maintenance and enhancement of the natural and cultural resources for which the area was designated.**

*1. Objective: Develop a cohesive interpretive program to provide the visiting public and national audience a multi-layered story of the interrelated history and ecological significance of this strategic location.*

Alternative 1

- Contract for the development of a comprehensive interpretive plan, based on specific themes and highlighting key periods in the history of the ONA, in close coordination with the ONA Partners.

Alternative 2

Continue to use discrete interpretive programs based on the Loxahatchee River Historical Society's and Palm Beach County ERM's themes.

2. *Objective: Provide an infrastructure of parking, trails and signage to accommodate public visitation to representative areas within the ONA in manner that protects historic, cultural and natural resources, as well as the security of U.S. Coast Guard installations.*

Alternative 1

- Construct additional public access points to natural areas within the ONA; an 8-car parking area on the north side and a 10-car parking area on the south side near the Beach Road Bridge.

- Install interpretive kiosks at major public access points and destinations within the ONA to provide an overview of the natural, historic and cultural resource values. These kiosks would be constructed at each public parking area and overlook and would include a map and general information on the ONA, as well as components of the interpretive program.

- Construct a trail system, compliant with American with Disabilities Act, to the existing tidal wetlands and construct a two-story overlook at the wetlands. This trail system would include concrete trails with turnouts in upland areas and elevated boardwalks along wetlands.

- Construct a soft trail system would include over 2,500 feet of new trail construction on the north side and approximately 1,550 feet of new soft trail construction on the south side of the ONA. Approximately 1,300 feet of the soft trail system would utilize existing management roads.

- Extend the existing tidal wetland to the south creating a second entrance to the Indian River Lagoon and a loop kayak route for additional recreational access.

- Creat an additional tidal lagoon south of Beach Road to provide a loop kayak route for additional recreational access and interpretive opportunity along the Indian River Lagoon.

- Construct a two-story overlook at the western edge of the existing tidal lagoon. The first story of this elevated platform would be handicap accessible and would provide a view of the tidal lagoon and mangrove habitat. The second story would provide an overview of much of the ONA.

- Construct an overlook on the south side of the ONA to provide the public with a view of Jupiter Inlet. This overlook would be accessed via a 6' wide concrete access trail (ADA compliant route) from the Jupiter Inlet Lighthouse and from the new public access point south of Kato Bridge. Access to the overlook from the Jupiter Inlet Lighthouse would be controlled as part of the guided tours of the lighthouse.

- Connect the northern and southern trail systems via a walk-through under Beach Road Bridge utilizing a metal catwalk with rails.

- Replace the existing asphalt road on the north side of Beach Road with a permeable surface road.

Alternative 2

- Utilize the existing parking in Jupiter Lighthouse Park for ONA parking, and install a traffic light and pedestrian crosswalk on Beach Road to provide for safe public access to the northern portions of the ONA.

- Install interpretive kiosks at each major public access point to identify the ONA, key public facilities and provide an overview of the natural, historic and cultural resource values.

- Construct a 1,120 foot shell rock trail to the tidal lagoon on the north side and an elevated boardwalk along the existing tidal lagoon to a one-story overlook at the existing tidal wetlands.

- Construct a shell rock loop trail from the Jupiter inlet Lighthouse to a point overlooking the Jupiter Inlet, and a shell rock loop trail from the new public access point south of Kato Bridge. Access from the Jupiter Inlet Lighthouse would be controlled as part of the guided tours of the lighthouse.

- No new tidal lagoon extension north Beach Road, but a new tidal area south of Beach Road constructed with one entrance.

- Repave the existing asphalt road between the new parking area and the U.S. Coast Guard fence.

*2. Objective: Protect the integrity of cultural and historic resources in high public use areas.*

Alternative 1

- Re-cap the midden behind the Station J building. Level area with clean sand, install geofabric and re-sod the site. Install pavers in high use areas to protect midden.

- Install a dock for use by Town of Jupiter authorized water taxies, no public docking.

- Construct a deck beneath the lighthouse council fig tree, the site of the original lighthouse keeper's house. This would also be constructed as a "floating" deck without excavated footings. The deck would serve to protect the site from foot traffic, provide an interpreted area for groups waiting to climb the lighthouse, and would be constructed in a manner to discourage climbing the iconic council fig.

- Cap the Jupiter lighthouse mound with geoweb, install a new irrigation system and native plantings. Erosion blankets would be used in less steep areas where feasible. Archeological surveys would be required before this project to identify particularly sensitive sites and to ensure that the anchoring of the geoweb would not damage archeological sites.

Alternative 2

- Construct a deck beneath the lighthouse council fig tree as described in Alternative 1.

- Install a new irrigation system to maintain the existing bahai grass cover. Reducing mowing will allow for a more vigorous grass cover and reduce the rate of erosion.

- Cap and install a deck over the midden area behind the Station J Building to provide protection for the site in this high public use area.

**Goal: Enhance the integrity of prehistoric and historic properties in the Jupiter Inlet Lighthouse Outstanding Natural Area to reflect the rich Native American and maritime history of this strategic location.**

*1. Objective: Maintain, restore and recreate historic structures within the ONA.*

Alternative 1

- Restore the historic keeper's workshop for public interpretation, as well as working shop/storage area. This project would include lead paint and asbestos abatement. The restoration would be required to meet the Secretary of the Interior's historic standards with review by the State Historic Preservation Officer and Historic Advisory Council.

- Develop a Memorandum of Understanding with the Secretary and the State Historic Preservation Officer, BLM and the ONA Partners to establish consistent monitoring, reporting and curation protocols for ensuring the protection of historic resources, cultural and prehistoric artifacts and human burial remains.

- Provide the public with interpretation of the original bridge tender's building south of Kato Bridge.

Alternative 2

- Restore the historic keeper's workshop, but utilize the space as storage and as a working shop for the ONA without the interpretive aspect provided in Alternative1.

- Develop a Memorandum of Understanding with the Secretary and State Historic Preservation Officer as in Alternative 1.

- Re-create components of the original bridge tender's building to be incorporated into the interpretive program of the ONA.

**Goal: Restore native plant communities and estuaries in the Outstanding Natural Area, with an emphasis on the conservation and enhancement of healthy, functioning ecological systems in perpetuity.**

*1. Objective: Remove all woody invasive plant species from the ONA and control regrowth and herbaceous invasive plant species so that they represent no more than 1% of the vegetation cover in the natural areas of the ONA within five years.*

Alternative 1

- Coordinate all ONA invasive weed control efforts into BLM pesticide use proposal program. This process would be updated every three years and would consider integrated weed management techniques that would reduce or minimize the use of herbicides throughout the ONA. Standardizing application techniques would reduce the need for parallel environmental review and would simplify contracting requirements across administrative boundaries.
- Remove and stump treat woody invasives with herbicides as needed in Lot 17 in stages over at least three years, treating the eastern third of the acreage after the Indian River Lagoon slope has been

stabilized. Leave Australian pine snags as roosts where they do not pose a public hazard. Plantings would be used to augment native vegetation in the tropical hardwood hammock areas.

Alternative 2

- Handle invasive weed control efforts separately within each administrative entity to meet the resource objectives.

- Remove all woody invasives in Lot 17 simultaneously, except for the area bordering the Indian River Lagoon, which would be treated only after the bluff area has been stabilized. Native plantings would be used to augment remaining vegetation in the tropical hardwood hammock areas.

*2. Objective: Implement a prescribed burn program that maintains fire dependent plant communities, assists with restoration of disturbed areas, adequately addresses smoke management issue and the control of hazardous fuels in this urban wildland interface.*

Alternative 1

- Combine the current management blocks into 5 units (four on the north side and one on the south side). The western units would be combined on the north side to be managed with mechanical manipulation only, such as roller chopping to maintain sand pine and oak scrub communities. The other units would be burned on a 15-year average to favor oak scrub and endemic forbs. These rotation dates are approximate and would be adjusted as needed to meet current weather and fuel conditions. Specific burn plans will be developed prior to each burn establishing the burn prescription based on fuel conditions and resource objectives.

Alternative 2

- Combine current management blocks into 6 units (five on the north side and one on the south side). The two western units on the north side and the south side unit would be burned on a 30-year rotation, a sufficient time for sand pine to mature. The three eastern units on the north side would be burned on a 15-year rotation maintaining oak scrub habitat and supporting earlier successional scrub endemics.

*3. Objective: Support the recovery of Federal and State-listed species within the capabilities of the ONA, and manage and enhance habitats to support other declining and at risk species.*

Alternative 1

- Utilize planting and seeding to augment the population of endangered four-petal pawpaw (*Asimina tetramera)* to create a self-sustaining, genetically diverse population of 500 plants within suitable habitat of the ONA.

- Explore relocation of endangered perforate lichen (*Cladonia perforata*) to suitable habitats within the ONA to expand the current population.

- Continue to maintain habitat values for Florida Scrub Jay, and participate, if opportunities for reintroduction become available.

- Maintain between 10 and 30% open sand in oak scrub areas to benefit endemic forbs utilizing a combination of root raking or hand clearing to expand existing open areas within oak scrub areas to maintain up to 30% open sand.

- Replace existing ball field fence with a 3-4' chain link fence and native, drought tolerant hedge to reduce trash, trampling, and deflect irrigation overspray into the adjacent scrub vegetation and provide increased protection for federally endangered perforate lichen.

- Lock gates and install a net over the northern side of the tennis courts to reduce the need to retrieve stray balls from the adjacent scrub areas and provide increased protection for federally endangered perforate lichen.

Alternative 2

- Augment the pawpaw population by planting locally collected seeds from onsite plants to establish up to 300 individuals.

- Relocate perforate lichen, as needed prior to prescribed burns or mechanical habitat manipulations, but only within currently occupied habitat.

- No active creation of open sand areas, same as No Action.

*4. Objective: Control or remove non-native wildlife species with the potential to adversely affect native species.*

Alternative 1

- Live trap all feral cats and remove from the ONA. Work to place cats with local support groups.

- Explore options for control of curly-tailed lizard, brown anole and other exotic wildlife species as methods become available.

Alternative 2

- Same as Alternative 1

*5. Objective: Ensure that the shorelines bordering the ONA are functioning properly and are capable of withstanding anticipated uses, and natural forces.*

Alternative 1

- Design a shoreline stabilization project which addresses active erosion issues along the Indian River Lagoon and Loxahatchee River, reducing or eliminating migration of material into the Intracoastal Waterway, stabilizing the shoreline and banks to curtail loss of soil and establishing a stand of native vegetation. The design would also establish a mangrove shelf along active shoreline areas to buffer the shore from storm surges, provide enhanced wildlife and fisheries habitat along these shorelines and to protect water quality within West Indian manatee critical habitat, and would visually screen the shoreline stabilization structures. The design would include reestablishing the 1995 shoreline along portions of the Loxahatchee River.

Alternative 2

- Design a shoreline stabilization project which addresses active erosion issues along the Indian River Lagoon and Loxahatchee River, reducing or eliminating migration of material into the Intracoastal Waterway, stabilizing the shoreline and banks to curtail loss of soil and establishing a native stand of vegetation. Mangrove balls would be used in shallow areas to enhance wildlife and fisheries habitat along these shorelines and to protect water quality within West Indian manatee critical habitat.

- This design would include options for boat moorings along the Indian River Lagoon shoreline, but stabilization structures and mangrove shelf would replace the existing beach area.

**Goal: Provide consistent public use guidelines for public safety and for the protection of natural, historic and cultural resources.**

*Objective: Establish supplementary rules for the ONA.*

Alternative 1

- Adopt as supplementary rules Palm Beach County's Natural Area Ordinance No. 94-13 for Lots 15, 16, 17 and 19 and adopt as supplementary rules Palm Beach County's Parks and Recreation Ordinance for Lots 18 and 20. These ordinances are available on line at

- Develop a law enforcement memorandum of understanding that would authorize enforcement of the supplementary rules by Palm Beach County Sheriff Department, Town of Jupiter Police, Village of Tequesta Police, and Florida State law enforcement officials and other entities, as appropriate.

Alternative 2

- Create a unique set of supplementary rules for the ONA which combine Palm Beach County's Natural Area and Parks and Recreation ordinances.

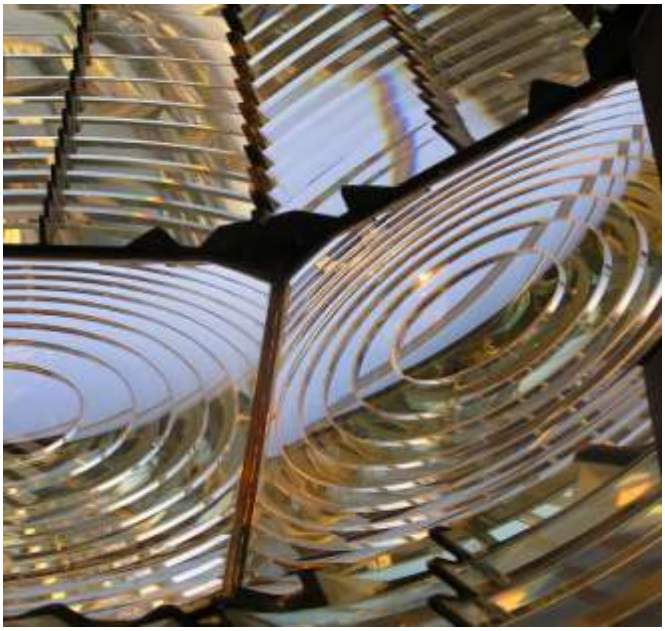

Figure 21. Jupiter Inlet Lighthouse's First Order Fresnel lens

# Part V. Environmental Assessment

## A. Purpose and Need for the Action

The Act designating the Jupiter Inlet Lighthouse Outstanding Natural Area requires that the Secretary of the Interior develop a management plan for the Jupiter Inlet Outstanding Natural Area within three years and that the plan be developed in consultation with appropriate Federal, State, county, and local government agencies, the U.S. Coast Guard Commandant, the Local Partners, and other partners; and in a manner that ensures full public participation. When approved, this plan will guide BLM and its partners in the future management of the ONA.

## B. Description of the Affected Environment

Refer to the Jupiter Inlet Lighthouse Outstanding Natural Area Management Plan for a description of the physical, natural and cultural resources found within the ONA.

## C. Description of the Proposed Action

Refer to the Jupiter Inlet Lighthouse Outstanding Natural Area Management for a description of the Alternatives and Management Practices Common to All Alternatives

## E. Environmental Impacts

The following elements are not expected to be significantly affected by the implementation of this plan, and will not be discussed further.

- Environmental justice
- Floodplains
- Hazardous or solid waste
- Prime or unique farmlands
- Wild and scenic rivers
- Wilderness

The following elements would be affected or have the potential to be affected by the implementation of this plan, and will be discussed further in this document.

- Water quality
- Air quality
- Cultural resources
- Native American culture or religious concerns
- Wildlife
- Threatened or endangered species
- Invasive, non-native species
- Wetland/riparian zones

**1. Water Quality**

**a. Impacts from the Alternative 1**

Shoreline stabilization projects would be designed to ultimately improve water quality in the Indian River Lagoon and Loxahatchee River by reducing the erosion and sedimentation from the adjacent shoreline and through the establishment of a mangrove shelf along portions of the shoreline. However, there is the potential to adversely affect water quality temporarily during construction of the shoreline and tidal wetlands proposed in the Alternative 1. Installing riprap, sheet piling and construction of the mangrove shelf would increase suspended sediments and could add to sedimentation of nearby sea grass beds. Use of turbidity curtains during all phases of the shoreline construction projects would be required to contain suspended sediments.

There are expected to be longterm water quality benefits from the construction of mangrove shelves that would be constructed along approximately 2,350 feet of the shoreline. In addition to supporting water quality through filtration, support of filtering organisms, and control of sediments, mangrove provide an additional layer of shoreline stabilization to buffer the site from storm damage and resulting erosion.

**b. Impacts from Alternative 2**

Under this alternative the shoreline stabilization project objectives would be the same, although provisions for boat moorings off shore would be designed into the project. This is expected to increase public use in the area and could result in some additional turbidity from prop damage and increases in waders. Mangrove balls would be placed in shallow areas along 2,600 feet of shoreline, rather than a mangrove shelf. This intermittent placement would not provide the same buffering effects for the shoreline during storm events discussed in Alternative 1.

**c. Impacts from the No Action Alternative**

The southern feet along western bank of the Indian River Lagoon have lost over 100 feet of land over the last 50 years, and that rate is accelerating with the loss of over 1,500 feet in the last five years. Without stabilization, the erosion of this bank into the Indian River Lagoon is expected to continue to contribute sediments along this reach of the estuary, adding to local turbidity.

**2. Air Quality**

**a. Impacts from Alternative 1**

The prescribed burning program has the potential to negatively impact air quality and affect individuals living, working or visiting in the Jupiter Inlet area. Smoke from prescribed fires can release five of the six "criteria air pollutants" identified by the Environmental Protection Agency, including aerosols of organic acids and hydrocarbons, and particulate matter of various size fractions. The type of pollutants varies with the type of fuel, its moisture content, the temperature of the fire, and the length of time materials continue to smolder after the fire. There are a number of facilities within a mile of the ONA, such as school, assisted living facilities and hospitals or medical clinics that are considered to be smoke sensitive. In addition, the relatively high number of older residents, with potential breathing difficulties, increases the critical need for smoke management during all prescribed burns. The proposed prescription would carry smoke over the Jupiter Inlet out to sea without affecting the inland air quality. Pre-treating burn blocks to remove larger diameter fuels would reduce the burn duration and the potential for the wind shifting. Completing mop-up of residual burns within six hours would also limit the potential for smoke exposure.

Prescribed burning of Lot 19 in particular has the potential to affect Coast Guard housing and should be closely coordinated with residents, so that smoke sensitive persons are given the opportunity to leave the site until all smoke issues have passed.

Some minor negative impacts to air quality could include generation of fugitive dust from ground disturbance and hydrocarbon emissions from vehicles. The latter would be caused by the use of mechanized equipment, such as mulchers or chain saws when used during treatment of the vegetation. Use of this equipment could also increase suspended particulates in the air. However, this impact would be minimized by ensuring use of appropriate and properly installed mufflers on all equipment. Further, increases of hydrocarbon emissions would be localized to the immediate vicinity of the project area and would be of short duration.

**b. Impacts from Alternative 2**

The prescribed burn program under Alternative 2 would include the use of prescribed fire to improve habitat and reduce hazardous fuels in the western two blocks of Lot 15. This would increase the number of burns conducted within the ONA, but because the burn rotation is 30 years for both of these burn blocks this would result in two additional burns over the life of this plan. The proximity of Highway 1 and potential for impacting visibility along this major transportation route would be increased under this alternative. Impacts to air quality during prescribed burns conducted every 15 years in the remaining blocks north of Beach Road and every 30 years for the block south of Beach Road remains the same as Alternative 1.

**c. Impacts from the No Action Alternative**

Under this alternative there would be no additional burning within the ONA and as a result no adverse affects to air quality. There would be no extensive use of mechanical equipment for removal of woody invasives in Lot 17 eliminating the minor emissions created by that activity.

**3. Soils**

**a. Impacts from the Alternative 1**

Impacts to soils could occur 1) mixing of the soil surface by heavy equipment, 2) soil compaction, 3) soil erosion and 4) use of prescribed fire. The first impact would be caused by the maneuvering of mechanized equipment on the soil surface, particularly in the mechanical manipulation of scrubs in the western management blocks, removal of invasives in Lot 17, and annual root raking to maintain fire breaks. This could cause a mixing of soil horizons and cause a short term loss of soil productivity in the scrub sites though the loss of soil cryptobiotic soil crusts, which fix nitrogen which can be passed to vascular plants. The second impact, soil compaction, would be caused by vehicle and machinery travel on the soil surface. Compaction decreases air and water infiltration into the soil profile thus reducing soil productivity. Because sandy soils are not highly susceptible to compaction and the total area affected would be small in a given year, impacts to soil productivity from compaction are expected to be negligible. The third impact, soil erosion occurs within the ONA where the vegetation cover on slopes is inadequate, and as a result of wave, storm surge and public use. There are actions proposed in this alternative to remediate active soil erosion along the banks of the Loxahatchee River and Indian River Lagoon, as well as areas vulnerable areas of the Jupiter Lighthouse mound. Under this alternative the most eroded shoreline along the Loxahatchee River would be returned and stabilized at its 1995 location. As in Impacts to Water, discussed above, additional assessment will be required to analyze the impacts, both positive and negative, of the final design of these projects.

The impacts of prescribed fire on soil productivity are complex. After fire large quantities of nitrogen, phosphorus, potassium, calcium, magnesium, sodium and sulphur become readily soluble (Wright, 1982). Fire is beneficial for incorporation of woody materials (nutrients) in areas where the soils are well drained (sandy soils) and decomposition of woody material generally takes longer. This rapid increase in nutrients in the soil would help stimulate new growth in areas that have been treated using fire. If vegetation is removed by a means other than by the use of prescribed fire, a measurable change in available nutrients is not anticipated because of the slow rate of decomposition of woody material on sandy well-drained soils. However, studies have shown that it may take 10 to 15 years or longer for soil crusts to recover from fire, depending on the soil crust species composition, area of the burn and distance from intact crusts (http://www.archbold-station.org/abs/ABS/research/plantecol/plantecolsoilcrusts.htm). These impacts maybe mitigated in more opens scrubs with scattered fuels.

**b. Impacts from Alternative 2**

Impacts to soils under Alternative 2 would be similar to Alternative 1, except that there would be 1,125 feet of new trail all of which would be shell rock trails instead of concrete. There would also be some additional soil disturbance of approximately 0.11 acres of sand pine scrub associated with the construction of a temporary fire break between the western burn blocks. This fire break would be needed only once during the life of this plan.

**c. Impacts from the No Action Alternative**

Impacts to soils under this alternative are primarily related to the unresolved erosion only the Loxahatchee River and Indian River Lagoon. Both shorelines have areas of active erosion. Soil will continue to be lost incrementally due to wind and tidal factors. These areas could experience catastrophic loss during hurricanes and other storm surges. Ongoing public use along the Indian River Lagoon is exacerbating soil loss as people climb and excavate the bank.

**3. Cultural Resources**
**a. Impacts from the Alternative 1**

All restorative, reconstruction to historic buildings and ground disturbance actions are adverse effects. These actions also have the potential to adversely affect undisturbed cultural deposits. A systematic archaeological survey of the 120 acres will allow for delineating areas devoid of cultural deposits and direct those ground disturbing activities to those areas. Consultation with the 106 Review and Compliance section of the Bureau of Historic Preservation, Department of State of the State of Florida will take place before the commencement of any work of the Jupiter Inlet Lighthouse Outstanding Natural Area.

All planned work on the Jupiter Inlet Lighthouse Outstanding Natural Area must be submitted to and approved by the Bureau of Historic Preservation, Department of State, State of Florida, before such work can begin. The 106 Review and Compliance section of the Bureau of Historic Preservation, Department of State will have oversight responsibility for all compliance activities with Federal and State of Florida historic preservation laws, regulations, and guidelines for all actions, or undertakings, by the Jupiter Inlet Lighthouse Natural Outstanding Area administrators. These laws include, but are not limited to, the following: the National Historic Preservation Act, as amended; the Archaeological Resources Protection Act, as amended; the Archaeological and Historic Preservation Act, as amended; Native American Graves Protection

and Repatriation Act, as amended; and Florida Statutes 267. In addition, implementing regulations of these laws will also be followed, including, but not limited to, 36 CFR 800 (Advisory Council regulations) and 36 CFR 60 (National Register of Historic Places regulations). Project specific guidelines, such as The Secretary of the Interior's Standards for the Treatment of Historic Properties (available from the National Park Service) and other Secretary of the Interior's standards and guidelines, such as, but not limited to, the National Park Service's Preservation Brief series including those with guidance on the abatement of lead paint and asbestos, which will have an effect (see 36 CFR 800.9).

**b. Impacts from Alternative 2**

Impacts to sites and structures under Alternative 2 would be similar to Alternative 1

**c. Impacts from the No Action Alternative**

Under the No-Action alternative, the projects would not proceed. The No-Action alternative would result in surface disturbances from soil erosion and heavy visitor traffic especially to site PB35-B, continued weather erosion to the Lighthouse mound and further deterioration to the historic structures. Also without a complete cultural resources survey of the entire 120 acres important prehistoric site elements could be lost.

**4. Native American Culture or Religious Concerns**

While the existence of cultural resources is known at the Jupiter Inlet Lighthouse Outstanding Natural Area sites associated with Native American religious practices have not been located on these public domain lots. In addition, no known historic properties (36CFR800) have been identified as being of concern to any federally recognized Native American tribe. However, Jupiter Inlet is considered to be within an area of interest by the Seminole Tribe of Florida, while other Native American tribes have expressed interest in disturbance of burials, if discovered.

**a. Impacts from the Alternative 1**

However, this area is within the traditional area of interest by the Seminole Tribe of Florida. Even though the area has a limited survey for cultural resources, unknown Native American sites could be damaged by implementation of the activities of this project. However, a stipulation covering accidental discovery, a systematic archaeological survey of the 120 acres will allow for delineating areas devoid of cultural deposits and direct those ground disturbing activities to those areas, impacts to any discovered site should be minimized.

Also consultation with the 106 Review and Compliance section of the Bureau of Historic Preservation, Department of State of the State of Florida will take place before the commencement of any work of the Jupiter Inlet Lighthouse Outstanding Natural Area. All planned work on the Jupiter Inlet Lighthouse Outstanding Natural Area must be submitted to and approved by the Bureau of Historic Preservation, Department of State, State of Florida, before such work can begin. The 106 Review and Compliance section of the Bureau of Historic Preservation, Department of State will have oversight responsibility for all compliance activities with Federal and State of Florida historic preservation laws, regulations, and guidelines for all

actions, or undertakings, by the Jupiter Inlet Lighthouse Natural Outstanding Area administrators. These laws include, but are not limited to, the following: the National Historic Preservation Act, as amended; the Archaeological Resources Protection Act, as amended; the Archaeological and Historic Preservation Act, as amended; Native American Graves Protection and Repatriation Act, as amended; and Florida Statutes 267. In addition, implementing regulations of these laws will also be followed, including, but not limited to, 36 CFR 800 (Advisory Council regulations) and 36 CFR 60 (National Register of Historic Places regulations). Project specific guidelines, such as The Secretary of the Interior's Standards for the Treatment of Historic Properties (available from the National Park Service) and other Secretary of the Interior's standards and guidelines, such as, but not limited to, the National Park Service's Preservation Brief series including those with guidance on the abatement of lead paint and asbestos, which will have an effect (see 36 CFR 800.9).

**b. Impacts from Alternative 2**

Impacts to sites under Alternative 2 would be similar to Alternative 1.

**c. Impacts from the No Action Alternative**

Under the No-Action alternative, the projects would not proceed. The No-Action alternative would result in surface disturbances from soil erosion and heavy visitor traffic especially to site PB35-B, continued weather erosion to the Lighthouse mound and further deterioration to the historic structures. Also without a complete cultural resources survey of the entire 120 acres important prehistoric site elements could be lost.

**5. Vegetation**

**a. Impacts from Alternative 1**

Vegetation have the potential to be affected by the development of public access facilities, including trails, boardwalks and overlooks, the creation and closure of management roads, shoreline stabilization projects, prescribed burns, invasive species control, installation of fencing, implementation of special rules, and increases in public use.

Although the alignment of trails and boardwalks is conceptual, the proposed action is estimated to include 2,575 feet of new hard trails, 4,200 feet of new soft trails, 550 square feet of new parking and 800 feet of new boardwalks. The construction of these facilities would result in the loss of 0.34 acres of scrub, 0.05 acres of hardwood hammock and 0.33 acres in areas of disturbed hardwood hammock dominated by invasive species, primarily Brazilian pepper. During construction of the new hard trails, the adjacent areas are expected to be temporarily disturbed by equipment and clearing activities. This is expected to include approximately 2 feet on either side of the trails, totaling an additional 0.24 acres of disturbance across these habitats. Vegetation clipped in this buffer area is likely to regrow unless the roots are damaged during the construction process. The exact trail alignment would be meandered around woody plant species to the maximum extent possible, and diverted around areas with special status plants. This would be particularly important during the final placement of the hard trail on the north side of Beach Road where the trail will bisect an area recently planted with federally endangered four-petal pawpaw and transplanted perforate lichen. Public use of the ONA is expected to increase and ultimately the construction of the trail system is expected to benefit special status plant species by funneling the public through the site and providing interpretive signage to increase public awareness of the sensitivity of the vegetation to trampling.

Restoration of Lot 17 would eventually add almost 3 additional acres of scrub oak and sand pine scrub and up to 23 acres of hardwood hammock habitat to the ONA.

The prescribed burn program would retain Florida oak scrub in burn blocks 1, 2 and 5 with burns scheduled on 15-year rotations. The number of sand pine in these areas is expected to eventually diminish as subsequent burns remove young sand pine before they have reached their maximum cone production. After the initial burn in Prescribed Burn Block 7, the 30-year burn rotation would be sufficient for sand pine to mature. In management blocks number 3 and 4 along Highway 1, vegetation would be manipulated mechanically to remove excess fuels and to renovate the scrub. This option provides flexibility in the amount and location of activities to maintain scrub characteristics, but may not provide the ecological benefits of prescribed fire, particularly for endemic herbaceous plants.

Disturbances, including mechanical disturbance and fire, would promote the spread of opportunistic, early succession plant species. At Jupiter Inlet, natal grass, a non-native grass, has been quick to invade following burns. Unless controlled early by hand pulling, natal grass removal can result in inadvertent damage to scrub endemics, particularly nodding pinweed, which also tends to germinate quickly in response to disturbance and can be difficult to detect in dense stands of natal grass.

Alternative 1 includes provisions to hand clear or root rake to maintain between 10 and 30% open sand in the scrub habitats to benefit endemic scrub species. This vegetation removal is primarily targeting scrub oaks, the dominant shrub. Herbaceous species would benefit from these scrub openings.

Establishing a native, drought-resistant hedge between the Jupiter Lighthouse Park ball fields and Lot 19 would reduce the amount of windblown litter entering the natural area to the east. It would also deflect some of the overspray from the Lighthouse Park's irrigation system, reducing the invasive weeds along the border and subsequently management costs associated with their removal.

The invasive weed control program in this alternative would be coordinated across administrative boundaries. Techniques and timing would be coordinated to limit the production of seed and spread of invasives from adjacent areas.

**b. Impacts from Alternative 2**

Although the alignment of trails and boardwalks is conceptual, the proposed action is estimated to include 4,000 feet of new shell rock trails, 750 feet of new soft trails, square feet of new parking and 240 feet of new boardwalk. The construction of these facilities would result in the loss of 0.18 acres of scrub, 0.13 acres of hardwood hammock and 0.33 acres in areas of disturbed hardwood hammock dominated by invasive species, primarily Brazilian pepper. During construction of the new hard trails, the adjacent areas are expected to be temporarily disturbed by equipment and clearing activities. This is expected to include approximately 2 feet on either side of the trails, totaling an additional 0.11 acres of disturbance across these habitats. Vegetation clipped in this buffer area is likely to regrow unless the roots are damaged during the construction process. The exact trail alignment would be meandered around woody plant species to the maximum extent possible, and diverted around areas with special status plants. This would be particularly important during the final placement of the hard trail on the north side of Beach Road where the trail will bisect an area recently planted with federally endangered four-petal pawpaw and transplanted perforate lichen. Public use of the ONA is expected to increase and ultimately the construction of the trail system is expected to benefit special status plant species by funneling the public through the site and providing interpretive signage to increase public awareness of the sensitivity of the vegetation to trampling. This alternative may provide some limited benefit over the hard trails in Alternative 1 by being more permeable and shedding less water into the trail shoulder. This should reduce the germination of invasive species.

Under this alternative, the prescribed burn program would be extended to include the two western management blocks, which would be burned on a 30-year rotation. Burning these blocks would require that the heavier standing fuels (sand pines) be removed or mulched prior to the burn to reduce the burn duration and residual smoke. In addition, most of the entire site would be chopped to reduce the flame heights.

**c. Impacts from No Action Alternative**

Under this alternative there would be no additional prescribed burns and public use facilities would not be constructed. While there is expected to be less public use within the natural areas of the ONA, casual use is expected to continue and could result in inadvertent trampling of lichen, nodding pinweed and other smaller species status plants. Without burning or efforts to maintain open sand scrub areas, the site would eventually return, over several decades, to a sand pine scrub which would shade out most forbs and many scrub endemics.

Without a buffer behind the ball fields and cover on the tennis courts, the adjacent scrub in Lot 19 would continue to be degraded by trampling, trash and the edges of the site would require extensive maintenance to remove invasive weeds. There is the potential for extensive trampling in this open scrub habitat, particularly lichens, fungus and small annuals.

The lack of shoreline restoration projects under this alternative would result in the continued erosion along the shoreline resulting in additional loss of vegetative cover. Unmanaged, the continued public use would result in the accelerating loss of this bluff and leave the site vulnerable to catastrophic loss during storm surges.

**6. Wildlife**

**a. Impacts from Alternative 1**

General wildlife is expected to benefit from the habitat actions proposed under this Alternative. The continuation of the prescribed burn program and invasive weed programs would maintain or improve habitat for scrub and wetland species. The combination of the prescribed burn program and mechanical manipulations would provide a mosaic of different aged scrub habitats capable of supporting a wide variety of species. The increased public use at the site may alter some use patterns, particularly roosting wading birds and potentially foraging tortoises. However, restricting the use to established trails is expected to limit those impacts and eventually most species are expected to habituate to the use.

At least 3 acres of scrub oak and sand pine scrub and up to 23 acres of hardwood hammock habitat would be created by the restoration of Lot 17, to the benefit most wildlife species recorded in the ONA.

The creation of approximately 3 acres of new tidal wetlands provides benefits, particularly for wading birds and fisheries. However, increases in public use along boardwalks and in kayaks may disrupt this use during peak visitation. Increases in public use may also bring increases in litter attracting racoons and crows, resulting in artificially high numbers. Construction of a mangrove shelf along reaches of the Indian River Lagoon and Loxahatchee River would eventually increase structure and shade, increasing habitat diversity for fish and invertebrates.

In some cases, the removal of non-native plant species may result in the short-term impact to wildlife, due to localized loss of cover. Ultimately, wildlife is expected to benefit from the removal of non-native vegetation and restoration of the native plant species. Leaving snags that do not pose a hazard to the

public is a standard procedure under this plan and would mitigate some of the temporary loss of structure, particularly for roosting egrets, herons and osprey.

**b. Impacts from Alternative 2**

Impacts to general wildlife under this alternative would be similar to Alternative 1, except that there would be no new wetland construction on the north of Beach Road, and the new tidal wetland south of Beach Road would have only one entrance, supporting more effective tidal flushing. Installation of mangrove balls along shallow shorelines could eventually provide limited shade or structure along the Indian River Lagoon and Loxahatchee River, but higher public use of the area because of the boat mooring facilities could reduce their viability and would potentially increase harassment and shoreline disturbances.

This Alternative proposes to removal almost all of the Brazilian pepper, Australian pine and other invasive species from Lot 17 at one time. This would remove structure and forage opportunities within the area without providing displacement opportunities.

**c. Impacts from No Action Alternative**

This Alternative

**7. Special Status Species**

The following discusses the anticipated impacts to federally and state-listed species.

**a. Impacts from Alternative 1**
**Plants/Lichen Species**

**Curtiss' milkweed** (*Asclepias curtissii*) - This species is expected to benefit from shorter rotation burns and its distribution on the tract should expand in disturbed scrub areas as invasive species are removed and fire is reintroduced. However, mechanical manipulations in the management blocks along Highway may not provide the optimal habitat.

**Four-petal pawpaw** (*Asimina tetramera*) – All of the known four-petal pawpaw in the ONA are located in areas where the burns are scheduled every 15 years. Fire damages or removes the aboveground portions of this long-lived shrub, but the below ground stems re-sprout quickly and the new growth supports increased flowering and fruiting. The most appropriate fire interval for four-petal pawpaw has not been established. Ongoing population augmentation would support the recovery of this species.

**Perforate reindeer lichen** (*Cladonia perforata*) - The effects of fire on this extremely rare lichen are not well understood. Ecological Consultants quoted Johnson and Abrahamson (1990), "*Cladonia and Cladina sp*. are destroyed by fire and take 10 to 12 years to recover to preburn levels". They also cited another recent study from Archbold Biological Station which indicates that lichens may recolonize burned sites within three to five, but at lower densities than prior to the burn (Menges 1995, in press). Mechanical disturbance is also likely to be detrimental to this species. As such, areas supporting concentrations of Florida perforate lichen would be excluded from mechanical disturbance and buffered from prescribed fire. Prior to prescribed burns under this alternative, perorate lichen would be moved from vulnerable locations, under sand pines and in dense litter, to suitable habitat including unoccupied habitats in other areas of the ONA. This option may expand the current population and provide refugia for this species during subsequent burns.

**Large-leaved rosemary** (*Conradina graniflora*) - This fire-dependent scrub endemic is expected to respond favorably to fire, and its distribution and numbers are expected to increase.

**Nodding pinweed** *(Lechea cernua)* - This species is fire-adapted and expected to benefit from the proposed management program. This species could be vulnerable to overspray during herbicide applications to treat invasive weeds, particularly natal grass. Mechanical treatments in lieu of burning in management blocks along Highway 1 may not provide adequate open sand for this species in those management blocks.

**Pine pinweed** (*Lechea divaricata*) - Only a few individuals of this species are present on the tract. Although the management program is expected to improve habitat conditions for this species, special care would be required to avoid individual plants during initial mechanical manipulations.

**Golden polypody** (*Phlebodium aureum*) - This epiphytic fern is fire adapted and is expected to resprout shortly after burning.

**Sand spikemoss** (*Selaginella arenicola*) - This species tends to occur in open sand areas where fire is not likely to carry and where mechanical manipulations would be unnecessary. There is potential for this species to be negatively impacted by mechanized equipment crossing open sand areas.

***Tillandsia* sp** . - All of the special status bromeliads are sensitive to fire and individuals would be killed during prescribed burns. Management blocks are expected to be recolonized from seed sources in adjacent blocks. However, the shorter burn rotations in management blocks 1, 2, and 3 are likely to limit numbers. Mechanical manipulation in the management blocks along Highway 1 provides additional flexibility to retain individual pines or oaks supporting these bromeliads.

**Shoestring fern** (*Vittaria lineata*) - Primarily a hammock species, some plants may be lost during scrub restoration activities.

**Wildife Species**

**Florida scrub jay** (*Aphelocoma coerulescens*) - The proposed management plan would continue to maintain habitat conditions for Florida scrub jay at Jupiter, particularly management blocks 1, 2 and 3 which would be burned on 15 year rotations. Staggered burning of these blocks would provide suitable structure (1.5 -6 feet high) across two blocks at any one time.

**Florida mouse** (*Podomys floridanus*) – Habitat for this species is expected to benefit from the shorter burn rotations in management blocks 1, 2 and 3. Florida mouse numbers have been noted to decline sharply after ten years following a fire (Humphrey 1992). Buffering gopher tortoise burrows from mechanical disturbance would reduce the potential for negatively impacting this species, which often utilizes gopher tortoise burrows.

**Gopher tortoise** (*Gopherus polyphemus*) –The continuation of the prescribed burn program is expected to benefit gopher tortoise by continuing to promote herbaceous forage species. The restoration activities in Lot 17 are expected improve habitat for this species in the upland areas. A gopher tortoise survey would be required prior to mechanical treatments and mechanical treatments would be excluded from operating within 25 feet of active, inactive or abandoned burrow.

**Scrub lizard** (*Sceloporus woodi*) - This species is expected to benefit from the maintenance of a mosaic of scrub habitats, particularly sand pine scrub edges.

**West Indian Manatee** (*Trichechus mantus*) – Shoreline restoration projects would occur within designated critical habitat for this species. These shoreline areas do not currently support seagrasses, but stabilization would reduce sedimentation in the general area, including nearby seagrass beds.

**b. Impacts from Alternative 2**

**Plants**

**Curtiss' milkweed** (*Asclepias curtissii*) - This species is expected to benefit under this alternative from including the management blocks along Highway 1 in the prescribed burn program.

**Four-petal pawpaw** (*Asimina tetramera*) – All of the known four-petal pawpaw in the ONA are located in areas where the burns are scheduled every 15 years. Fire damages or removes the aboveground portions of this long-lived shrub, but the below ground stems re-sprout quickly and the new growth supports increased flowering and fruiting. The most appropriate fire interval for four-petal pawpaw has not been established.

**Perforate reindeer lichen** (*Cladonia perforata*) - The effects of fire on this extremely rare lichen are not well understood. Ecological Consultants quoted Johnson and Abrahamson (1990), "*Cladonia and Cladina sp*. are destroyed by fire and take 10 to 12 years to recover to preburn levels". They also cited another recent study from Archbold Biological Station which indicates that lichens may recolonize burned sites within three to five, but at lower densities than prior to the burn (Menges 1995, in press). Mechanical disturbance is also likely to be detrimental to this species. As such, areas supporting concentrations of Florida perforate lichen would be excluded from mechanical disturbance and buffered from prescribed fire. Prior to prescribed burns under this alternative, perorate lichen would be moved from vulnerable locations, under sand pines and in dense litter, to suitable habitat including unoccupied habitats in other areas of the ONA. This option may expand the current population and provide refugia for this species during subsequent burns.

**Large-leaved rosemary** (*Conradina graniflora*) - This fire-dependent scrub endemic is expected to respond favorably to fire, and its distribution and numbers are expected to increase.

**Nodding pinweed** *(Lechea cernua)* - This perennial herb is fire-adapted, resprouting and seeding after burns and is expected to benefit from the proposed management program. This species could be vulnerable to overspray during herbicide applications to treat invasive weeds, particularly natal grass. Mechanical treatments in lieu of burning in management blocks along Highway 1 may not provide adequate open sand or prompt the same seeding response in these management blocks.

**Pine pinweed** (*Lechea divaricata*) - At most, only a few individuals of this species are present on the tract. Although the management program is expected to improve habitat conditions for this species, special care would be required to avoid individual plants during initial mechanical manipulations.

**Golden polypody** (*Phlebodium aureum*) - This epiphytic fern is fire-adapted and is expected to resprout shortly after burning.

**Sand spikemoss** (*Selaginella arenicola*) - Same as Alternative 1.

***Tillandsia* sp.** - All of the special status bromeliads are sensitive to fire and individuals would be killed during prescribed burns. Management blocks are expected to be recolonized from seed sources in adjacent blocks. However, the shorter burn rotations in management blocks 1, 2, and 3 are likely to limit

numbers. The initial prescribed burn in the management blocks along Highway 1 would kill most of the bromeliads. While the longer burn rotation would eventually allow for the more mature structure needed for these plants, there may be reduced seed sources in the adjacent more frequently burned management blocks.

**Shoestring fern** (*Vittaria lineata*) - Primarily a hammock species, some plants may be lost during prescribed burns.

**Wildlife**

**Florida scrub jay** (*Aphelocoma coerulescens*) - The proposed management plan would continue to maintain habitat conditions for Florida scrub jay at Jupiter, particularly management blocks 1, 2 and 3 which would be burned on 15 year rotations. Staggered burning of these blocks would provide suitable structure (1.5 -6 feet high) across two blocks at any one time.

**Florida mouse** (*Podomys floridanus*) – Same as alternative 1, however, there may be some additional benefit to including the management blocks along Highway in the prescribed burn program. Protection of gopher tortoise burrows during mechanical manipulations would provide protection for this species.

**Gopher tortoise** (*Gopherus polyphemus*) –The continuation of the prescribed burn program is expected to benefit gopher tortoise by continuing to promote herbaceous forage species. The restoration activities in Lot 17 are expected improve habitat for this species in the upland areas. A gopher tortoise survey would be required prior to mechanical treatments and mechanical treatments would be excluded from operating within 25 feet of active, inactive or abandoned burrow.

**Scrub lizard** (*Sceloporus woodi*) - This species is expected to benefit from the maintenance of a mosaic of scrub habitats, particularly sand pine scrub edges.

**West Indian Manatee** (*Trichechus mantus*) – Shoreline restoration projects would occur within designated critical habitat for this species. These shoreline areas do not currently support seagrasses, but stabilization would reduce sedimentation in the general area, including nearby seagrass beds. Boat mooring options in this alternative could increase harassment of manatee traveling through this portion of the Indian River Lagoon and increase the potential for propeller injuries.

**7. Invasive, Non-native Species**

**a. Impacts from Alternative 1**

Control of invasive, non-native plants would be coordinated across the ONA through the Coordinated Weed Management Area. This alternative provides the greatest level of coordination and collaboration across administrative boundaries. Under this alternative the partners would collaborate on contracts, methods and timing which would lead to more effective control.

The ongoing suppression of invasive and exotic plant species would reduce competition with endemic scrub species and allow for restoration of native plant communities. Outside of Lot 17, control of invasive plant species is primarily an ongoing program of suppressing herbaceous annuals and vines. In most cases this can be attained by hand pulling with limited foliar herbicide application in areas with dense stands or heavy vines, or stump treatment of woody regrowth. There is potential to affect non-target vegetation in dense stands of invasives, particularly invasive grasses and vines.

In Lot 17, woody invasives would be removed incrementally west to east over a period of three years. This would allow for some invasive species to reseed treated areas and require increased retreatment by hand-pulling and herbicide application to accomplish adequate control.

In the long-term, though, mangroves and other wetland species are expected to benefit from the restoration of a more natural hydrologic regime and reduced competition with non-native plant species along the shoreline.

**b. Impacts from Alternative 2**

Impacts under this alternative would be similar to Alternative 1, except that each entity would be responsible for their own invasive, non-native program. While this could be effective, budget issues, differences in prioritization, and contract timing is likely to result in implementation gaps, resulting in non-treatment of some areas which could subsequently act as seed sources.

Weed treatment techniques and the associated impacts would be similar to Alternative 1.

Under this alternative, mature woody vegetation in Lot 17 would be removed at one time, leaving only the most eastern portion untreated until after the shoreline has been fully stabilized. This method would reduce the number of retreatments and amount of herbicide needed to suppress the regrowth of non-native species.

**c. Impacts from the No Action Alternative**

Impacts would be similar to Alternative 2, except that under this alternative there would be no invasive removal in Lot 17. This is the last major acreage within the ONA with woody invasives. Not treating this area would be a lost opportunity to restore native habitat values on this 23 acres.

**8. Wetland/Riparian Zones**

**a. Impacts from the Alternative 1**

This Alternative would result in the construction of approximately three acres of new tidal wetland components through the extension of the existing tidal lagoon and creation of an additional opening, the creation of a new tidal lagoon with two entrances south of Kato Bridge. Approximately 2,400 feet of mangrove shelf would also be constructed along the Indian River Lagoon and Loxahatchee River, creating a narrow intertidal area and increasing the diversity of habitat and buffering capacity of the shoreline. There is potential for the second opening on the existing tidal lagoon to dissipate the flushing capacity of that lagoon, and increase the need for future maintenance to keep the openings from silting in. The same would be true for the second tidal lagoon proposed south of Kato Bridge.

**b. Impacts from Alternative 2**

Under this alternative, there would be no new wetland construction and only mangrove balls placed along about 2,400 feet of shallow shoreline. The scattered mangrove would not provide the intertidal zone nor the shade and structure benefits of the more extensive mangrove shelf proposed under Alternative 1. Increases in public use along these wetlands as a result of boat mooring opportunities may result curtail the growth and reduce the survivability of mangrove in this alternative. The new tidal wetland proposed south of Kato Bridge in this alternative would have only one inlet and is expected to more efficient in flushing sediments, requiring less maintainance and reducing the disturbance related to that maintenance.

**c. Impacts from the No Action Alternative**

Under this Alternative, there would be no new wetland construction or shoreline stabilization. Without shoreline stabilization, the erosion on both the Indian River Lagoon and the Loxahatchee River would continue to degrade shoreline habitats and leave them vulnerable to catastrophic loss during hurricane storm surges.

**9. Recreation and Public Use**

**a. Impacts from the Alternative 1**

This alternative provides the most public access to the interior of the ONA. The public would be directed from two new parking areas to a system of accessible trails to the primary destinations and viewing spots, as well as a series of soft trails that loop through the site. Observation decks would be constructed at the two major overlooks, the existing tidal wetland and Jupiter inlet. Elevated boardwalks along wetlands would be constructed along mangrove wetlands and on the south side in particular would provide a view of the crystal clear incoming tide that has made this site such a destination for snorkeling. The north and south trail systems would be linked under Kato Bridge, reducing the need for the public to cross Beach Road to access both sides of the ONA.

New facilities would be constructed to more effectively accommodate increased public visitation while protecting the historic and cultural resources. The area behind the Station J building would be filled, and capped with geofabric and resodded to cap the existing midden. Pavers would be installed in high use areas as additional protection and to provide a level, stable surface for visiting public. A deck would be constructed at the base of the lighthouse under the council fig tree, to protect the site of the original lighthouse keeper's house, and provide seating and a waiting area for lighthouse visitors. This also provides an additional opportunity for public interpretation.
This alternative creates a mangrove shelf along the southern reaches of the Indian River Lagoon. This option would eliminate public access to the bluff. The existing beach area would be replaced with a shoreline stabilization structure. There would be no boat mooring facilities constructed under this alternative.

**b. Impacts from Alternative 2**

This alternative provides less connected access through the ONA. There would be no new parking areas, requiring visitors to park at Jupiter Lighthouse Park and walk across Beach Road. A traffic light and a cross walk are proposed to provide for that crossing. Single deck observation tower at the existing tidal wetland would provide for an overlook of the tidal lagoon entrance to the Indian River Lagoon, but it would not be sufficiently high to provide a view over mature mangrove or of the scrub areas west of the lagoon. There would be no overlook south of Beach Road, and the public would be able to view Jupiter inlet only while passing on the trail. There would be only one elevated boardwalk constructed to the existing tidal wetland. The public would view the Indian River Lagoon from a shell rock loop trail from a trail head south of Kato Bridge.

Like Alternative 1, new facilities would be constructed to more effectively accommodate increased public visitation while protecting the historic and cultural resources. The area behind the Station J building would be filled, and capped with a deck to protect the midden area and provide for higher public use. Like Alternative 1, a deck would be constructed at the base of the lighthouse under the council fig tree, to protect the site of the original lighthouse keeper's house, and provide seating and a

waiting area for lighthouse visitors. This would also provide an additional opportunity for public interpretation.

This alternative would provide for boat mooring along the Indian River Lagoon, which is expected to increase public use in this area. The mangrove shelf proposed in Alternative 1 would be replaced with mangrove balls placed where shallow water permits. This option provides for more access along the shoreline, although the existing beach areas area likely to be replaced with a shoreline stabilization structure.

**c. Impacts from the No Action Alternative**

Without the construction of additional public access facilities the majority of the ONA would remain inaccessible for most visitors. Lack of signage and parking would dissuade most people from venturing from the existing facilities associated with Lighthouse Park and the Loxahatchee River Historical Society. The unauthorized use along the Indian River Lagoon would continue to be difficult to control and degradation of the site would continue.

**10. Visual Resources**

**b. Impacts from Alternative 1**

As described in other sections of this plan, a fundamental intent of Congress in designating the ONA is to restore and protect this historic dune ecosystem, which includes its vegetation. Because of years of invasive plant development, this has required intensive management activities to remove trees such as Brazilian Pepper and Australian Pine, which has caused change in what had been the typical setting at the site: acres of trees have been cut down, understory vegetation has been cut, pulled and removed, and prescribed burns have blackened and charred both native and non-native plants. In lot 17 this activity would take place under both alternatives I and II. Experience over the past ten years in lot 15 has shown that understory grasses, shrubs and forbs are fairly quick to reemerge. Following prescribed burns, the charred blackness of the understory is the first impact to be reduced, and windblown sands quickly add the bright white color characteristic of these dunes. Within several growing seasons, the rapid growth of some shrubs adds a vertical canopy to the landscape. The most significant visual change that has resulted from the past habitat management and future proposed actions would be the permanent loss of the tree canopy from invasive trees. In the VRM program,short-term (up to 1 year) and medium term (up to 5 years) temporary changes in the landscape, and are not usually mitigated during the recovery process.

The visitor use facilities would be developed using Palm Beach County design standards. From the observation points, very little of the facilities would be seen other than the trailhead parking lots and signs. The County has built a large number of similar facilities in similar sites in the region, using treated lumber, concrete, and compacted “shell rock” aggregate. These materials are durable, blend in well with the landscape, and are commonly found and easy to repair. Any visual impacts from the construction of the recreation facilities would be minor, and would not conflict with the VRM class III rating for the site. One possible impact would be that the two-story observation platforms would protrude above the height of the scrub vegetation; however this would repeat the pattern created nearby housing and landscaping which is designed and constructed to allow views of the waterways and ocean. The historic renovations would be focused on preserving the setting and character of the structures, and the work involved would not generally be visible to from the observation points. Other proposed fencing around the ONA would be unfinished split rail.

Shoreline hardening is common along various parts of the inlet, and rivers. Mangroves planted along the shoreline would reduce their visual impact, increase the amount of mangrove habitat in the area, and keep the public out of the shoreline natural areas. All wood structures would be left unfinished and allowed to weather to help them match their surroundings. The chain link fence proposed between the sports fields and lot 17 would be black chain link fence, which is very low visibility against the dense vegetation behind it. The portal signs proposed in the plan would replace signs in similar locations as the existing portal signs, and directional signs would be placed to use existing sign structures wherever possible, as approved by the various transportation departments involved.

**b. Impacts from Alternative 2**

Impacts under Alternative 2 would be similar to Alternative 1, except that all of the woody invasives in Lot 17 would be removed during the same year, increasing the impacts to visual resources, particularly when viewed from Jupiter Inlet Colony and from boats on the Indian River Lagoon. This would be relatively short term, as most hardwood hammock species grow quickly. Vegetation is expected to again dominate the site within three to four years. Also, under this alternative there would be no mangrove shelf construction to soften the visual impact of shoreline stabilization projects.

**b. Impacts from No Action Alternative**

Under the No Action Alternative there would be no removal of invasive trees from Lot 17, nor shoreline stabilization project. While this alternative maintains the existing vegetation cover avoiding short term impacts to visual resources, over the long term this alternative is would result in continuing erosion of the bank along the Indian River Lagoon.

# Part VII. Appendices

1

## A. Public Law 110-229, Section 202

LIGHTHOUSE OUTSTANDING NATURAL AREA.

(a) Definitions.--In this section:

(1) Commandant.--The term ``Commandant'' means the Commandant of the Coast Guard.

(2) Lighthouse.--The term ``Lighthouse'' means the Jupiter Inlet Lighthouse located in Palm Beach County, Florida.

(3) Local partners.--The term ``Local Partners'' includes--

(A) Palm Beach County, Florida;

(B) the Town of Jupiter, Florida;

(C) the Village of Tequesta, Florida; and

(D) the Loxahatchee River Historical Society.

(4) Management plan.--The term ``management plan'' means the management plan developed under subsection (c)(1).

(5) Map.--The term ``map'' means the map entitled ``Jupiter Inlet Lighthouse Outstanding Natural Area'' and dated October 29, 2007.

(6) Outstanding natural area.--The term ``Outstanding Natural Area'' means the Jupiter Inlet Lighthouse Outstanding Natural Area established by subsection (b)(1).

(7) Public land.--The term ``public land'' has the meaning given the term ``public lands'' in section 103(e) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1702(e)).

(8) Secretary.--The term ``Secretary'' means the Secretary of the Interior.

(9) State.--The term ``State'' means the State of Florida.

(b) Establishment of the Jupiter Inlet Lighthouse Outstanding Natural Area.--

(1) Establishment.--Subject to valid existing rights, there is established for the purposes described in paragraph (2) the Jupiter Inlet Lighthouse Outstanding Natural Area, the boundaries of which are depicted on the map.

(2) Purposes.--The purposes of the Outstanding Natural Area are to protect, conserve, and enhance the unique and nationally important historic, natural, cultural, scientific, educational, scenic, and recreational values of the Federal land



surrounding the Lighthouse for the benefit of present generations and future generations of people in the United States, while--

(A) allowing certain recreational and research activities to continue in the Outstanding Natural Area; and

(B) ensuring that Coast Guard operations and activities are unimpeded within the boundaries of the Outstanding Natural Area.

(3) Availability of map.--The map shall be on file and available for public inspection in appropriate offices of the Bureau of Land Management.

(4) Withdrawal.--

(A) In general.--Subject to valid existing rights, subsection (e), and any existing withdrawals under the Executive orders and public land order described in subparagraph (B), the Federal land and any interests in

the Federal land included in the Outstanding Natural Area are withdrawn from--

(i) all forms of entry, appropriation, or disposal under the public land laws;

(ii) location, entry, and patent under the mining laws; and

(iii) operation of the mineral leasing and geothermal leasing laws and the mineral materials laws.

(B) Description of executive orders.--The Executive orders and public land order described in subparagraph (A) are--

(i) the Executive Order dated October 22, 1854;

(ii) Executive Order No. 4254 (June 12, 1925); and

(iii) Public Land Order No. 7202 (61 Fed. Reg. 29758).

(c) Management Plan.--

(1) In general.--Not <<NOTE: Deadline.>> later than 3 years after the date of enactment of this Act, the Secretary, in consultation with the Commandant, shall develop a comprehensive management plan in accordance with section 202 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712) to--

(A) provide long-term management guidance for the public land in the Outstanding Natural Area; and

(B) ensure that the Outstanding Natural Area fulfills the purposes for which the Outstanding Natural Area is established.

(2) Consultation; public participation.--The management plan shall be developed--

(A) in consultation with appropriate Federal, State, county, and local government agencies, the Commandant, the Local Partners, and other partners; and

(B) in a manner that ensures full public participation.

(3) Existing plans.--The management plan shall, to the maximum extent practicable, be consistent with existing resource plans, policies, and programs.

(4) Inclusions.--The management plan shall include--

(A) objectives and provisions to ensure--

(i) the protection and conservation of the resource values of the Outstanding Natural Area; and

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(ii) the restoration of native plant communities and estuaries in the Outstanding Natural Area, with an emphasis on the conservation and enhancement of healthy, functioning ecological systems in perpetuity;

(B) objectives and provisions to maintain or recreate historic structures;

(C) an implementation plan for a program of interpretation and public education about the natural

and cultural resources of the Lighthouse, the public land surrounding the Lighthouse, and associated structures;

(D) a proposal for administrative and public facilities to be developed or improved that--

(i) are compatible with achieving the resource objectives for the Outstanding Natural Area described in subsection (d)(1)(A)(ii); and

(ii) would accommodate visitors to the Outstanding Natural Area;

(E) natural and cultural resource management strategies for the Outstanding Natural Area, to be developed in consultation with appropriate departments of the State, the Local Partners, and the Commandant, with an emphasis on resource conservation in the Outstanding Natural Area and the interpretive, educational, and long-term scientific uses of the resources; and

(F) recreational use strategies for the Outstanding Natural Area, to be prepared in consultation with the Local Partners, appropriate departments of the State, and the Coast Guard, with an emphasis on passive recreation.

(5) Interim plan.--Until a management plan is adopted for the Outstanding Natural Area, the Jupiter Inlet Coordinated Resource Management Plan (including any updates or amendments to the Jupiter Inlet Coordinated Resource Management Plan) shall be in effect.

(d) Management of the Jupiter Inlet Lighthouse Outstanding Natural Area.--

(1) Management.--

(A) In general.--The Secretary, in consultation with the Local Partners and the Commandant, shall manage the Outstanding Natural Area--

(i) as part of the National Landscape Conservation System;

(ii) in a manner that conserves, protects, and enhances the unique and nationally important historical, natural, cultural, scientific, educational, scenic, and recreational values of the Outstanding Natural Area, including an emphasis on the restoration of native ecological systems; and

(iii) in accordance with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) and other applicable laws.

(B) Limitation.--In managing the Outstanding Natural Area, the Secretary shall not take any action that precludes, prohibits, or otherwise affects the conduct of ongoing or future Coast Guard operations or activities on lots 16 and 18, as depicted on the map.

(2) Uses.--Subject to valid existing rights and subsection (e), the Secretary shall only allow uses of the Outstanding

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Natural Area that the Secretary, in consultation with the Commandant and Local Partners, determines would likely further the purposes for which the Outstanding Natural Area is established.

(3) Cooperative agreements.--To facilitate implementation of the management plan and to continue the successful partnerships with local communities and other partners, the Secretary may, in accordance with section 307(b) of the Federal Land Management Policy and Management Act of 1976 (43 U.S.C. 1737(b)), enter into cooperative agreements with the appropriate Federal, State, county, other local government agencies, and other partners (including the Loxahatchee River Historical Society) for the long-term management of the Outstanding Natural Area.

(4) Research activities.--To continue successful research partnerships, pursue future research partnerships, and assist in the development and implementation of the management plan, the Secretary may, in accordance with section 307(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1737(a)), authorize the conduct of appropriate research activities in the Outstanding Natural Area for the purposes described in subsection (b)(2).

(5) Acquisition of land.--

(A) In general.--Subject to subparagraph (B), the Secretary may acquire for inclusion in the Outstanding Natural Area any State or private land or any interest in State or private land that is--

(i) adjacent to the Outstanding Natural Area; and

(ii) identified in the management plan as appropriate for acquisition.

(B) Means of acquisition.--Land or an interest in land may be acquired under subparagraph (A) only by donation, exchange, or purchase from a willing seller with donated or appropriated funds.

(C) Additions to the outstanding natural area.--Any land or interest in land adjacent to the Outstanding Natural Area acquired by the United States after the date of enactment of this Act under subparagraph (A) shall be added to, and administered as part of, the Outstanding Natural Area.

(6) Law enforcement activities.--Nothing in this section, the management plan, or the Jupiter Inlet Coordinated Resource Management Plan (including any updates or amendments to the Jupiter Inlet Coordinated Resource Management Plan) precludes, prohibits, or otherwise affects--

(A) any maritime security, maritime safety, or environmental protection mission or activity of the Coast Guard;

(B) any border security operation or law enforcement activity by the Department of Homeland Security or the Department of Justice; or

(C) any law enforcement activity of any Federal, State, or local law enforcement agency in the Outstanding Natural Area.

(7) Future disposition of coast guard facilities.--If the Commandant determines, after the date of enactment of this Act, that Coast Guard facilities within the Outstanding

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Natural Area exceed the needs of the Coast Guard, the Commandant may relinquish the facilities to the Secretary without removal, subject only to any environmental remediation that may be required by law.

(e) Effect on Ongoing and Future Coast Guard Operations.--Nothing in this section, the management plan, or the Jupiter Inlet Coordinated Resource Management Plan (including updates or amendments to the Jupiter Inlet Coordinated Resource Management Plan) precludes, prohibits, or otherwise affects ongoing or future Coast Guard operations or activities in the Outstanding Natural Area, including--

(1) the continued and future operation of, access to, maintenance of, and, as may be necessitated for Coast Guard missions, the expansion, enhancement, or replacement of, the Coast Guard High Frequency antenna site on lot 16;

(2) the continued and future operation of, access to, maintenance of, and, as may be necessitated for Coast Guard missions, the expansion, enhancement, or replacement of, the military family housing area on lot 18;

(3) the continued and future use of, access to, maintenance of, and, as may be necessitated for Coast Guard missions, the expansion, enhancement, or replacement of, the pier on lot 18;

(4) the existing lease of the Jupiter Inlet Lighthouse on lot 18 from the Coast Guard to the Loxahatchee River Historical Society; or

(5) any easements or other less-than-fee interests in property appurtenant to existing Coast Guard facilities on lots 16 and 18.

(f) Authorization of Appropriations.--There are authorized to be appropriated such sums as are necessary to carry out this section.

## B. Master Species List

| SCIENTIFIC NAME | COMMON NAME | STATUS | | | |
|---|---|---|---|---|---|
| | | USFWS | FDACS | FNAI | FLEPPC |
| | | | | | |
| **Fungi** | | | | | |
| **Geastrum floriforme* | Earthstar | | | | |
| | | | | | |
| **Lichens** | | | | | |
| *Cladonia evansii* | Cladonia | | | | |
| *Cladonia leporina* | British Solders | | | | |
| *Cladonia perforata* | Perforate Reindeer Lichen | E | E | G1/S1 | |
| *Cladonia prostrata* | Cladonia | | | | |
| *Cladonia subtenuis* | Cladonia | | | | |
| | | | | | |
| **Ferns and fern allies** | | | | | |
| *Acrostichum danaeifolium* | Giant Leather Fern | | | | |
| *Blechnum serrulatum* | Swamp Fern | | | | |
| *Nephrolepis cordifolia* | Boston Fern | | | | Category I |
| *Phlebodium aureum* | Golden Polypody | | | | |
| *Polypodium polypodioides* | Resurrection Fern | | | | |
| var. *michauxianum* | | | | | |
| *Pteridium aquilinum* | Bracken Fern | | | | |
| *Selaginella arenicola* | Sand Spikemoss | | | | |
| *Vittaria lineata* | Shoestring Fern | | | | |
| | | | | | |
| **Gymnosperms** | | | | | |
| *Pinus clausa* | Sand Pine | | | | |
| **Monocots** | | | | | |
| **AGAVACEAE {agave family}** | | | | | |
| *Agave americana* | Century Plant | | | | exotic |
| | | | | | |
| **ARECACEAE formerly PALMAE {palm family}** | | | | | |
| *Phoenix reclinata* | Senegal date Palm | | | | exotic |
| *Sabal palmetto* | Sabal Palm; Cabbage Palm | | | | |
| *Serenoa repens* | Saw Palmetto | | | | |
| | | | | | |
| **ASPARAGACEAE {asparagus family}** | | | | | |
| *Asparagus densiflorus* | Asparagus Fern | | | | Category I |
| | | | | | |
| **BROMELIACEAE {pineapple family}** | | | | | |
| *Tillandsia flexuosa* | Banded Air Plant | | T | G5/S3 | |
| *Tillandsia paucifolia* | Pot-bellied Tillandsia | | | | |
| *Tillandsia recurvata* | Ball Moss | | | | |
| *Tillandsia usneoides* | Spanish Moss | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Tillandsia utriculata* | Giant Wild Pine | | E | | |
| | | | | | |
| **CYPERACEAE {sedge family}** | | | | | |
| *Bulbostylis ciliatifolia* | Hairsedge | | | | |
| *Cladium jamaicense* | Sawgrass | | | | |
| *Cyperus globulosus* | Globe Sedge | | | | |
| *Cyperus ligularis* | Large Cyperus | | | | |
| *Cyperus planifolius* | Glaucus Cyperus | | | | |
| *Cyperus retrorsus* | Flatsedge | | | | |
| *Fimbristylis castanea* | Fimbristylis | | | | |
| *Fimbristylis spathacea* | Hurricanegrass | | | | |
| *Rhynchospora megalocarpa* | Large-seeded Beakrush | | | | |
| | | | | | |
| **IRIDACEAE {iris family}** | | | | | |
| *Sisyrinchium xeriphyllum* | Blue-eyed Grass | | | | |
| | | | | | |
| **POACEAE {grass family}** | | | | | |
| *Andropogon virginicus* | Broomsedge | | | | |
| *Aristida gyrans* | Corkscrew Threeawn | | | | |
| *Cenchrus incertus* | Coast Sandspur | | | | |
| *Cynodon dactylon* | Bermudagrass | | | | |
| *Dactyloctenium aegyptium* | Crowfootgrass | | | | |
| *Dichanthelium portoricense* | Panic-grass | | | | |
| *Distichlis spicata* | Saltgrass | | | | |
| *Eragrostis sp.* | Love Grass | | | | |
| *Eremochloa ophiuroides* | Centipedegrass | | | | |
| *Eustachys petraea* | Eustachys | | | | |
| *Panicum repens* | Torpedograss | | | | I |
| *Paspalum distichum* | Seashore Paspalum | | | | |
| *Paspalum notatum* | Bahiagrass | | | | Category I |
| *Paspalum setaceum* | Thin Paspalum | | | | |
| *Rhynchelytrum repens* | Natal Grass | | | | Category II |
| *Spartina bakeri* | Sand Cordgrass | | | | |
| *Spartina patens* | Saltmeadow Cordgrass | | | | |
| *Sporobolus indicus* | Smutgrass | | | | exotic |
| *Stenotaphrum secundatum* | St. Augustine Grass | | | | exotic |
| | | | | | |
| **RUSCACEAE {bowstring-hemp family}** | | | | | |
| *Sansevieria hyacinthoides* | Bowstring-Hemp | | | | Category II |
| | | | | | |
| **SMILACACEAE (greenbriar family}** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Smilax auriculata* | Greenbrier; Catbrier | | | | |
| *Smilax bona-nox* | Greenbrier; Catbrier | | | | |
| | | | | | |
| **Dicots other than composites** | | | | | |
| *Abrus precatorius* | Rosary Pea, Crab's-eye | | | | Category I |
| *Acacia aunculiformis* | Ear-leaf Acacia | | | | Category I |
| *Albizia lebbeck* | Womans-tongue-tree | | | | Category II |
| *Annona glabra* | Pond Apple | | | | |
| *Asimina reticulata* | Gopher-berry Pawpaw | | | | |
| *Asimina tetramera* | Four-petal Pawpaw | E | E | G1/S1 | |
| *Ardisia escallonioides* | Marlberry | | | | |
| *Asclepia feayi* | Feay's Milkweed | | | | |
| *Asclepias curtissii* | Curtiss' Milkweed | | E | | |
| *Avicennia germinans* | Black Mangrove | | | | |
| *Bacopa monnieri* | Water Hyssop | | | | |
| *Balduina angustifolia* | Yellow Buttons | | | | |
| *Batis maritima* | Saltwort | | | | |
| *Buchnera americana* | Blueheart | | | | |
| *Bumelia salicifolia* | Willow Bustic | | | | |
| *Bumelia tenax* | Tough Buckthorn | | | | |
| *Bursera simaruba* | Gumbo-limbo | | | | |
| *Callicarpa americana* | Beauty Berry; Beauty Bush | | | | |
| *Canavalia rosea* | Baybean | | | | |
| *Carica papaya* | Papaya | | | | exotic |
| *Cassytha filiformis* | Love Vine | | | | |
| *Casuarina equisetifolia* | Australian Pine | | | | Category I |
| *Catharanthus roseus* | Periwinkle | | | | exotic |
| *Ceratiola ericoides* | Rosemary | | | | |
| *Cereus undatus* | Night-blooming cereus | | | | Category II |
| *Chamaecrista fasciculata* | Partridge-pea | | | | |
| *Chamaesyce cordifolia* | Spurge | | | | |
| *Chenopodium ambrosioides* | Mexican Tea | | | | exotic |
| *Chiococca alba* | Snowberry | | | | |
| *Chrysobalanus icaco* | Coco-plum | | | | |
| *Citharexylum fruticosum* | Fiddlewood | | | | |
| *Cnidoscolus stimulosus* | Tread Softly; Stinging Nettles | | | | |
| *Coccoloba uvifera* | Sea Grape | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Conocarpus erecta* | Buttonwood | | | | |
| *Conradina grandiflora* | Large-flowered Rosemary | | T | G3/S3 | |
| *Crotalaria pallida ovovata* | Rattlebox | | | | exotic |
| *Crotalaria rotundifolia* | Rabbit-bells; Rattle-box | | | | |
| *Croton glandulosus* | Simpson's Croton | | | | |
| *Cynanchum angustifolium* | Cynanchum | | | | |
| *Dalbergia ecastophyllum* | Coin Vine | | | | |
| *Desmodium incanum* | Beggar's Lice; Common Tick-trefoil | | | | exotic |
| *Diodia teres* | Poor Joe | | | | |
| *Eugenia uniflora* | Surinam Cherry | | | | Category I |
| **Eustoma exaltatum* | Marsh Gentian | | | | |
| *Ficus aurea* | Strangler Fig | | | | |
| *Ficus microcarpa* | Laurel Fig | | | | Category I |
| *Galactia elliottii* | Elliott's Milk Pea | | | | |
| *Galactia regularis* | Milk Pea | | | | |
| *Galium hispidulum* | Bedstraw | | | | |
| *Gaura angustifolia* | Southern Gaura | | | | |
| *Hamelia patens* | Firebush | | | | |
| *Helianthemum nashii* | Scrub Frostweed | | | | |
| *Hibiscus furcellatus* | Hibiscus | | | | |
| *Hibiscus tiliaceus* | Mahoe | | | | Category II |
| *Ipomoea pes-caprae* | Railroad-vine | | | | |
| *Iresine diffusa* | Bloodleaf | | | | |
| *Iva frutescens* | Marsh-elder | | | | |
| *Kalanchoe pinnata* | Life Plant | | | | Category II |
| *Kalanchoe tubiflora* | Chandelier Plant | | | | exotic |
| *Kosteletzkya virginica* | Saltmarsh Mallow | | | | |
| *Laguncularia racemosa* | White Mangrove | | | | |
| *Lantana camara* | Shrub Verbena | | | | Category I |
| *Lantana involucrata* | Lantana | | | | |
| *Lechea cernua* | Nodding pinweed | | T | G3/S3 | |
| *Lechea deckertii* | Woody Pinweed | | | | |
| *Licania michauxii* | Gopher Apple | | | | |
| *Lippia nodiflora* | Frog-fruit; Carpetweed | | | | |
| *Luecaena leucocephala* | Lead tree | | | | Category |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | II |
| *Lyonia ferruginea* | Rusty Lyonia | | | | |
| *Melaleuca quinquenervia* | Punk Tree; Cajeput | | | | |
| *Mentzelia floridana* | Poorman's Patch | | | | |
| *Metopium toxiferum* | Poisonwood | | | | |
| *Momordica charantia* | Balsam Apple | | | | exotic |
| *Oenothera laciniata* | Cut-leaved Evening Primrose | | | | |
| *Opuntia humifusa* | Prickly-pear Cactus | | | | |
| *Paronychia americana* | Ground Squares | | | | |
| *Parthenocissis quinquefolia* | Virginia Creeper | | | | |
| *Phyllanthus sp.* | Phyllanthus | | | | exotic |
| *Physalis viscosa var. maritima* | Physalis | | | | |
| *Plumbago scandens* | Wild Plumbago | | | | |
| *Poinsettia cyathophora* | Painted-leaf | | | | |
| *Polanisia tenuifolia* | Polanisia | | | | |
| *Polygala grandiflora* | Large-flowered Milkwort | | | | |
| *Polygonella ciliata* | Wireweed | | | | |
| *Polygonella polygama* | Jointweed | | | | |
| *Polygonella robusta* | Sandhill Wireweed | | | | |
| *Polypremum procumbens* | Rustweed | | | | |
| *Portulaca pilosa* | Pink Purslane | | | | |
| *Psychotria nervosa* | Wild Coffee | | | | |
| *Psidium guajava* | Guava | | | | Category I |
| *Quercus chapmanii* | Chapman's Oak | | | | |
| *Quercus geminata* | Sand Live Oak | | | | |
| *Quercus myrtifolia* | Myrtle Oak | | | | |
| *Randia aculeata* | Randia; Box-brier; White Indigo-berry | | | | |
| *Raphanea punctata* | Myrsine | | | | |
| *Rhabdadenia biflora* | Rubber Vine | | | | |
| *Rhizophora mangle* | Red Mangrove | | | | |
| *Rhoeo spathacea* | Oyster Plant | | | | Category I |
| *Richardia brasiliensis* | Richardia | | | | exotic |
| *Richardia grandiflora* | Large-flowered Richardia | | | | exotic |
| *Rivina humilis* | Rouge Plant | | | | |
| *Salicornia virginica* | Perennial Glasswort | | | | |
| *Sapium sebiferum* | Popcorn Tree; Chinese Tallow Tree | | | | Category I |

| | | | | | |
|---|---|---|---|---|---|
| *Schefflera actnophylla* | Australian Umbrella Tree; Schefflera | | | | Category I |
| *Schinus terebinthifolius* | Brazilian Pepper | | | | Category |
| *Scoparia dulcis* | Sweet Broom | | | | |
| *Sesuvium portulacastrum* | Sea Purslane | | | | |
| *Setaria sp.* | Foxtail | | | | |
| *Seymeria pectinata* | Seymeria | | | | |
| *Sida acuta* | Broomweed | | | | exotic |
| *Sida cordifolia* | Sida | | | | exotic |
| *Simarouba glauca* | Paradise Tree | | | | |
| *Spermacoce verticillata* | Shrubby False Buttonweed | | | | exotic |
| *Stipulicida setacea* | Stipulicida | | | | |
| *Stylisma villosa* | Hairy Dawnflower | | | | |
| *Sueda linearis* | Sea Blite | | | | |
| *Tecomaria capensis* | Cape Honeysuckle | | | | exotic |
| *Thespesia populnea* | Seaside Mahoe | | | | Category I |
| *Tribulus cistoides* | Burnut; Bicycle-tire-poppers | | | | Category II |
| *Trichostema dichotomum* | Forked Blue-curls | | | | |
| *Vigna luteola* | Cowpea | | | | |
| *Vitis munsoniana* | So. Fox Grape; Scuppernong; Muscadine | | | | |
| *Ximenia americana* | Tallow Wood; Hog Plum | | | | |
| *Zanthoxylum clava-herculis* | Hercules-club | | | | |
| *Zanthoxylum fagara* | Wild Lime | | | | |
| | | | | | |
| **ASTERACEAE formerly COMPOSITAE {daisy or aster family}** | | | | | |
| *Ambrosia artemisiifolia* | Common Ragweed | | | | |
| *Bidens alba var. radiata* | Beggar Ticks | | | | |
| *Borrichia frutescens* | Sea Daisies; Sea Oxeye | | | | |
| *Conyza canadensa var. pusilla* | Dwarf Horseweed | | | | |
| *Eupatorium leptophyllum* | Lopsided Dog Fennel | | | | |
| **Flaveria linearis* | Narrowleaf Yellowtops | | | | |
| *Helianthus debilis var. debilis* | Dune Sunflower | | | | |
| *Mikania scandens* | Climbing Hempweed | | | | |
| *Palafoxia feayi* | Palafoxia | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Palafoxia integrifolia* | Pink Lace | | | | |
| *Pityopsis graminifolia* | Pityopsis; Grass-leaved Golden Aster | | | | |
| *Solidago odora var. chapmanii* | Chapman's Goldenrod | | | | |
| *Sonchus oleraceus* | Fire Weed | | | | exotic |
| *Tridax procumbens* | Tridax | | | | exotic |
| *Verbesina virginica* | Frostweed | | | | |
| *Wedelia trilobata* | Creeping Oxeye | | | | Category II |

USFWS - United States Fish and Wildlife Service – Animals and Plants

**E** – Endangered: Any species which is in danger of extinction through all or a portion of its range.

**T**- Threatened: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

FDACS - Florida Department of Agriculture and Consumer Affairs - Plants

**E** - Endangered: Species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered species or threatened species pursuant to the federal Endangered Species Act of 1973, as amended. Pub. L. No. 93-205(87 Stat. 884).

**T** – Threatened: Species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered

**CE** – Commercially Exploited: Species native to the state which are subject to being removed In significant numbers from native habitats in the state and sold or transported for sale

FNAI - Florida Natural Areas Inventory - Plants, Animals and Natural Communities FNAI ranks indicate the global (G) or state (S) status of a species or exemplary natural community; definitions are from FNAI (2008), updated as of March 2009.

Global Rank Definitions

**G1:** Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1,000 individuals) or because of extreme vulnerability to extinction due to some natural or human factor

**G2:** Imperiled globally because of rarity (6 to 20 occurrences or fewer than 3,000 individuals) or because of vulnerability to extinction due to some natural or human factor

**G3**: Either very rare and local throughout its range (21 to 100 occurrences or fewer than 10,000 individuals), or found locally in a restricted range, or vulnerable to extinction from other factors

**G4**: Apparently secure globally (may be rare in parts of range)

**G5**: Demonstrably secure globally

State Rank Definitions

State ranks follow the same system and have the same definitions as global ranks, except that they apply only to Florida.

FLEPPC - Florida Exotic Pest Plant Council Invasive Plant Lists

**Category I** invasives when they are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.
**Category II** invasive exotics have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These species may become Category I if ecological damage is demonstrated.
**Exotic** - Non-native species not listed as Category 1 or II by FLEPPC

**Note:** All of these organizations have other listing/ranking criteria which did not pertain to this species list and which were omitted from the definitions, for example extinct species or species extirpated from the wild.

| SCIENTIFIC NAME | COMMON NAME | STATUS | | | |
|---|---|---|---|---|---|
| | | USFWS | FWC | FNAI | BCC |
| | | | | | |
| | | | | | |
| **Mammals (Names and sequence from *Revised Checklist of North American Mammals)*** | | | | | |
| Virginia opossum | *Didelphis virginiana* | | | | |
| Eastern mole | *Scalopus aquaticus* | | | | |
| Nine-banded armadillo | *Dasypus novemcinctus* | | | | |
| Eastern cottontail | *Sylvilagus floridanus* | | | G5 | |
| Gray squirrel | *Sciurus carolinensis* | | | | |
| Cotton mouse | *Peromyscus gossypinus* | | | | |
| Oldfield mouse | *Peromyscus polionotus* | | | | |
| Florida mouse | *Peromyscus floridanus* | | SSC | G3T2/ S3 | |
| Cotton rat | *Sigmodon hispidus* | | | | |
| Gray fox | *Urocyon cinereoargenteus* | | | | |
| Raccoon | *Procyon lotor* | | | | |
| Northern river otter | *Lutra canadensis* | | | | |
| Bobcat | *Lynx rufus* | | | | |
| White-tailed deer | *Odocoileus virginianus* | | | | |
| West Indian manatee | *Trichechus manatus* | E | E | G2/S2 | |
| | | | | | |
| **Birds (Names and sequence from *A.O.U. Check-list of North American Birds)*** | | | | | |
| American White Pelican | *Pelecanus erythrorhynchos* | | | | |
| Brown Pelican | *Pelecanus occidentalis* | | SSC | G3/S3 | |
| Double-crested Cormorant | *Phalacrocorax auritus* | | | | |
| Great Blue Heron | *Ardea herodias* | | | | |
| Reddish Egret | *Egretta rufescens* | | SSC | G4/S2 | |
| Great Egret | *Casmerodius albus* | | | G5/S4 | |
| Snowy Egret | *Egretta thula* | | SSC (1) | G5/S3 | |
| Black-crowned Night Heron | *Nycticorax nycticorax* | | | G5/S3 | |
| Little Blue Heron | *Florida caerulea* | | SSC | G5/S4 | |
| Tri-colored Heron | *Hydranassa tricolor* | | SSC | G5/S4 | |
| Cattle Egret | *Bubulcus ibis* | | | | |
| Green Heron | *Butorides virescens* | | | | |
| White Ibis | *Eudocimus albus* | | SSC | G5/S4 | |
| Black Vulture | *Coragyps atratus* | | | | |
| Turkey Vulture | *Cathartes aura* | | | | |
| Muscovy Duck (non-native) | *Cairina moschata* | | | G4 | |
| American Wigeon | *Anas americana* | | | | |
| Mottled Duck | *Anas fulvigula* | | | G4 | |
| Osprey | *Pandion haliaetus* | | SSC | G5/S3 S4 | |
| Sharp-shinned Hawk | *Accipiter striatus* | | | | |
| Cooper's Hawk | *Accipiter cooperii* | | | G5/S3 | |

| | | | | | |
|---|---|---|---|---|---|
| Red-shouldered Hawk | *Buteo lineatus* | | | | |
| Red-tailed Hawk | *Buteo jamaicensis* | | | | |
| American Kestrel | *Falco sparverius* | | | | |
| Merlin | *Falco columbarius* | | | G5/S2 | |
| Black-bellied Plover | *Pluvialis squatarola* | | | | |
| Killdeer | *Charadrius vociferus* | | | | |
| Spotted Sandpiper | *Actitis macularia* | | | | |
| Laughing Gull | *Larus atricilla* | | | | |
| Ring-billed Gull | *Larus delawarensis* | | | | |
| Royal Tern | *Sterna maxima* | | | G5/S3 | |
| Rock Pigeon | *Columba livia* | | | | |
| Common Ground Dove | *Columbina passerina* | | | | BCC |
| Eurasian Collared-Dove (non-native) | *Streptopelia decaocto* | | | | |
| White-winged Dove | *Zenaida asiatica* | | | | |
| Mourning Dove | *Zenaida macroura* | | | | |
| Eastern Screech Owl | *Otus asio* | | | | |
| Great-horned Owl | *Bubo virginianus* | | | | |
| Barred Owl | *Strix varia* | | | | |
| Chuck-will's-widow | *Caprimulgus carolinensis* | | | | BCC |
| Common Nighthawk | *Chordeiles minor* | | | | |
| Chimney Swift | *Chaetura pelagica* | | | | |
| Belted Kingfisher | *Megaceryle alcyon* | | | | |
| Red-bellied Woodpecker | *Melanerpes carolinus* | | | | |
| Downy Woodpecker | *Picoides pubescens* | | | | |
| Northern Flicker | *Colaptes auratus* | | | | |
| Pileated Woodpecker | *Dryocopus pileatus* | | | | |
| Barn Swallow | *Hirundo rustica* | | | | |
| Eastern Phoebe | *Sayornis phoebe* | | | | |
| Great Crested Flycatcher | *Myiarchus crinitus* | | | | |
| Gray Kingbird | *Tyrannus dominicensis* | | | | |
| Loggerhead Shrike | *Lanius ludovicianus* | | | G4 | BCC? |
| White-eyed Vireo | *Vireo griseus* | | | | |
| Blue-headed Vireo | *Vireo solitarius* | | | | |
| Yellow-throated Vireo | *Vireo flavifrons* | | | | |
| Blue-headed Vireo | *Vireo solitarius* | | | | |
| Blue Jay | *Cyanocitta cristata* | | | | |
| Florida Scrub Jay | *Aphelocoma coerulescens* | T | T | G2/S2 | |
| American Crow | *Corvus brachyrhynchos* | | | | |
| Fish Crow | *Corvus ossifragus* | | | | |
| Tree Swallow | *Tachycineta bicolor* | | | | |
| Carolina Wren | *Thryothorus ludovicianus* | | | | |
| House Wren | *Troglodytes aedon* | | | | |
| Ruby-crowned Kinglet | *Regulus calendula* | | | | |
| Blue-gray Gnatcatcher | *Polioptila caerulea* | | | | |
| American Robin | *Turdus migratorius* | | | | |
| Gray Catbird | *Dumetella carolinensis* | | | | |
| Northern Mockingbird | *Mimus polyglottos* | | | | |
| Brown Thrasher | *Toxostoma rufum* | | | | |

| | | | | | |
|---|---|---|---|---|---|
| European Starling (non-native) | *Sturnus vulgaris* | | | | |
| Orange-crowned Warbler | *Vermivora celata* | | | | |
| Northern Parula | *Parula americana* | | | | |
| Yellow-throated Warbler | *Dendroica dominica* | | | | |
| Cape May Warbler | **Dendroica tigrina* | | | | |
| Yellow-rumped Warbler | *Dendroica coronata* | | | | |
| Pine Warbler | *Dendroica pinus* | | | | |
| Prairie Warbler | *Dendroica discolor* | | | G5T3/ S3 | BCC |
| Palm Warbler | *Dendroica palmarum* | | | | |
| Black-and-white Warbler | *Mniotilta varia* | | | | |
| Common Yellowthroat | *Geothlypis trichas* | | | | |
| Eastern Towhee | *Pipilo erythrophthalmus* | | | | |
| Northern Cardinal | *Cardinalis cardinalis* | | | | |
| Painted Bunting | *Passerina ciris* | | | G5/S3 | BCC nb |
| Common Grackle | *Quiscalus quiscula* | | | | |
| Boat-tailed Grackle | *Quiscalus major* | | | | |
| American Goldfinch | *Carduelis tristis* | | | | |
| House Sparrow | *Passer domesticus* | | | | |
| | | | | | |
| **Reptiles** | | | | | |
| Southern Black Racer | *Coluber constrictor* | | | | |
| Coachwhip snake | *Masticophis flagellum* | | | | |
| Gopher Tortoise | *Gopherus polyphemus* | Under review | T | G3/S3 | |
| Six-lined Racerunner | *Cnemidophorus sexlineatus* | | | | |
| Florida Scrub Lizard | *Sceloporus woodi* | | | G3/S3 | |
| Green Anole | *Anolis carolinensis* | | | | |
| Brown Anole* | *Anolis sagrei* | | | | |
| Fox Gecko* | *Hemidactylus garnotii* | | | | |
| Northern Curly-tailed Lizard* | *Leiocephalus carinatus armouri* | | | | |
| | | | | | |
| **Amphibians** | | | | | |
| Oak Toad | *Bufo quercicus* | | | | |
| Southern Toad | *Bufo terrestris* | | | | |
| Marine Toad* | *Bufo marinus* | | | | |
| Eastern Narrowmouth Toad | *Gastrophryne carolinensis* | | | | |
| Cuban Treefrog (non-native) | *Osteopilus septentrionalis* | | | | |
| Fox gecko (non-native) | *Hemidactylus garnotii* | | | | |
| | | | | | |
| **Fishes (observed since August 2000 in tidal lagoon)** | | | | | |
| Bay Anchovy | *Anchoa mitchilli* | | | | |
| Pork Fish | *Anisotremus virginicus* | | | | |
| Sheepshead | *Archosargus probatocephalus* | | | | |
| Hardhead Catfish | *Arius felis* | | | | |
| Crevalle Jack | *Caranx hippos* | | | | |
| Common Snook | *Centropomus undecimalis* | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Stingray | *Dasyatus spp.* | | | | |
| Striped Mojarra | *Diapterus plumieri* | | | | |
| Spotfin Mojarra | *Eucinostomus argenteus* | | | | |
| Silver Jenny | *Eucinostomus gula* | | | | |
| Eastern Mosquitofish | *Gambusia holbrooki* | | | | |
| Yellowfin Mojarra | *Gerres cinereus* | | | | |
| Scaled Sardine | *Harengula jaguana* | | | | |
| Pin Fish | *Lagodon rhomboides* | | | | |
| Gray Snapper | *Lutjanus griseus* | | | | |
| Lane Snapper | *Lutjanus sunagris* | | | | |
| Striped Mullet | *Mugil cephalus* | | | | |
| White Mullet | *Mugil curema* | | | | |
| Checkered Puffer | *Sphoeroides testudineus* | | | | |
| Great Barracuda | *Sphyaena barracuda* | | | | |
| Atlantic Needlefish | *Strongylura marina* | | | | |
| | | | | | |
| **Insects** | | | | | |
| Green lynx spider | *Peucetia viridans* | | | | |
| Bush Katydid | *Scudderia* sp. | | | | |
| Cone-headed Grasshopper | *Neoconocephalus* sp. | | | | |
| Southeastern Lubber Grasshopper | *Romalea microptera* | | | | |
| Cicada | (?)**Tibicen* sp. | | | | |
| Gulf Fritillary | *Agraulis vanillae* | | | | |
| Cloudless sulphur butterfly | *Phoebis sennae* | | | | |
| Corporal skimmer | *Libellula deplanata (tentative id)* | | | | |

USFWS - United States Fish and Wildlife Service – Animals and Plants

**E** – Endangered: Any species which is in danger of extinction through all or a portion of its range.

**T**- Threatened: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Under review – USFWS is reviewing species for consideration for listing

FDACS - Florida Department of Agriculture and Consumer Affairs - Plants

**E** - Endangered: Species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered species or threatened species pursuant to the federal Endangered Species Act of 1973, as amended. Pub. L. No. 93-205(87 Stat. 884).

**T** – Threatened: Species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered

**CE** – Commercially Exploited: Species native to the state which are subject to being removed In significant numbers from native habitats in the state and sold or transported for sale

FWC - Florida Fish and Wildlife Conservation Commission - Animals

**E** - Endangered: As designated by the Commission, a species, subspecies, or isolated population of a species or subspecies which is so few or depleted in number or so restricted in range or habitat due to any man-made or natural factors that it is in imminent danger of extinction.
**T** – Threatened: As designated by the Commission, a species, subspecies or isolated population of a species or subspecies which is facing a very high risk of extinction in the future.

**SSC:** Species of Special Concern: As designated by the Commission, a species, subspecies, or isolated population of a species or subspecies which is facing a moderate risk of extinction in the future.

FNAI - Florida Natural Areas Inventory - Plants, Animals and Natural Communities FNAI ranks indicate the global (G) or state (S) status of a species or exemplary natural community; definitions are from FNAI (2008), updated as of March 2009.

Global Rank Definitions
**G1:** Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1,000 individuals) or because of extreme vulnerability to extinction due to some natural or human factor
**G2:** Imperiled globally because of rarity (6 to 20 occurrences or fewer than 3,000 individuals) or because of vulnerability to extinction due to some natural or human factor
**G3**: Either very rare and local throughout its range (21 to 100 occurrences or fewer than 10,000 individuals), or found locally in a restricted range, or vulnerable to extinction from other factors
**G4**: Apparently secure globally (may be rare in parts of range)
**G5**: Demonstrably secure globally

State Rank Definitions
State ranks follow the same system and have the same definitions as global ranks, except that they apply only to Florida.

FLEPPC - Florida Exotic Pest Plant Council Invasive Plant Lists

**Category I** invasives when they are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.
**Category II** invasive exotics have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These species may become Category I if ecological damage is demonstrated.
**Exotic** - Non-native species not listed as Category 1 or II by FLEPPC

BCC – U.S. Fish and Wildlife Service's list of Birds of Conservation Concern 2008. This publication identifies species, subspecies, and populations of migratory and nonmigratory birds in need of additional conservation actions.

BCC- Included on list
**nb** – Non-breeding in this region (BCR 31)

**Note:** All of these organizations have other listing/ranking criteria which did not pertain to this species list and which were omitted from the definitions, for example extinct species or species extirpated from the wild.

## C. Palm Beach County Ordinances

# Palm Beach County Natural Areas Ordinance 94-13

ARTICLE XI. NATURAL AREAS*

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*Editor's note: Ord. No. 94-13, adopted June 21, 1994, effective June 27, 1994, amended this Code by adding provisions designated by the editor as ch. 11, art. XI, §§ 11-251--11-272.

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Sec. 11-251. Short title; applicability.

(a) This article shall be known as the "Palm Beach County Natural Areas Ordinance."

(b) The recitations set forth in the "WHEREAS" paragraphs included in Ordinance No. 94-13 are incorporated by reference herein as findings of fact upon which this article is based.

(c) All provisions of this article shall be effective within the unincorporated and incorporated areas of the county and shall set restrictions, constraints, and requirements to protect and preserve county-managed natural areas.

(d) This article shall be liberally construed to effect the purposes set forth herein.

(Ord. No. 94-13, § 1, 6-21-94)

Sec. 11-252. Authority.

This article is adopted under the authority of chapter 125, Florida Statutes.

(Ord. No. 94-13, § 2, 6-21-94)

Sec. 11-253. Purpose.

The purpose of this article is to preserve and protect in perpetuity county-managed natural areas by regulating public uses of these lands.

(Ord. No. 94-13, § 3, 6-21-94)

Sec. 11-254. Definitions.

The following terms when used in this article shall have the meanings ascribed to them in this section:

Department means the department of environmental resources management.

Natural area means all public lands containing high-quality native ecosystems that are under the control of or assigned to the department for management, maintenance, and operation.

Natural areas property means all structures, facilities, plants, and animals contained within a natural area.

Parking area means a specially designed and publicly designated area set aside for the standing or temporary stationing of vehicles.

Permit means a document or certificate provided by the county administrator or his designee granting permission to conduct or take part in a specific activity at a specific location.

Vehicle means any wheeled conveyance for transportation of persons or materials whether:

(1) Powered or drawn by motor such as an automobile, truck, motorcycle, scooter, or minibike.

(2) Animal-drawn such as a carriage, wagon, or cart.

(3) Self-propelled such as a bicycle.

Watercraft means any boat, kayak, canoe, raft, houseboat, barge, vessel, ship or any other floating device capable of transporting humans or objects over water.

(Ord. No. 94-13, § 4, 6-21-94)

Sec. 11-255. Scope.

This article applies only to county-owned or county-controlled natural areas and natural areas property that is assigned to the department of environmental resources management for management, maintenance and operation. Department staff and other authorized persons working under staff supervision shall be exempt from the provisions of this article when performing activities related to management plans.
(Ord. No. 94-13, § 5, 6-21-94)

Sec. 11-256. Buildings and other property.
(a) No person shall willfully mark, deface or damage in any way, or displace, remove or tamper with, any natural area building, fence, educational or informational structure, walkway, bridge, bench, railing, public utility, paving or paving material, or part or appurtenance thereof, natural area sign, notice or placard, monument, stake, post, or other boundary marker, or other structure or equipment, facility or natural area property or appurtenance that is located on a natural area.
(b) No person shall dig, move, or remove from any natural area any sand, soil, rocks, stones, trees, shrubs, or plants, fallen timber, or other wood or materials, or make any excavation by tool, equipment, blasting or other means.
(Ord. No. 94-13, § 6, 6-21-94)

Sec. 11-257. Plant and wildlife protection and preservation.
(a) Within any natural area, no person shall cut, carve, or damage the bark, or break off limbs or branches or mutilate in any way, or pick the flowers or seeds, of any tree or plant, or shrub, nor shall any person dig in or disturb grassy areas, or transplant or remove any tree or plant or part thereof, or in any other way damage or impair the natural beauty or usefulness of any natural area, nor shall any person deposit any debris or material on or about any tree or plant.
(b) Within any natural area, no person shall molest, harm, frighten, kill, trap, hunt, chase, shoot, throw objects at, harass, feed, or otherwise inhibit the natural movements and habits of any invertebrate, mammal, amphibian, reptile, fish or bird. No person shall remove or have in his or her possession the young of any wild animal, or the eggs or nests of any amphibian, reptile, fish, bird or invertebrate. The provisions of this section applying to fishes are not applicable in designated fishing areas.
(c) In order to prevent disruption of natural ecosystems and the spread of disease, no person shall introduce, plant, or release any plant or animal into any natural area.
(Ord. No. 94-13, § 7, 6-21-94)
Editor's note: As originally promulgated, Ord. No. 94-13 contained no § 8.

Sec. 11-258. Reserved.

Sec. 11-259. Fires.
No person shall build or attempt to build, light, or cause to be lighted any fire or fires within any natural area unless given permission under a written permit from the county administrator or his designee. No person shall drop, throw, or otherwise deposit lighted matches, burning cigarettes or cigars, tobacco paper, or other flammable materials within any natural area or on any county highway, road or street abutting or contiguous thereto.
(Ord. No. 94-13, § 9, 6-21-94)

Sec. 11-260. Boating.
(a) All provisions of chapter 327, Florida Statutes, shall apply to county-managed natural area waters.
(b) No person shall launch or operate any watercraft upon any watercourse, lagoon, lake, canal, pond, marsh, wet prairie or slough within a natural area except at such places that are designated for such use by the board of county commissioners or the county administrator or his designee.
(c) No person shall operate, moor, or anchor any watercraft within the waters of any natural area in a manner that results in damage or harm to the vegetation, wildlife or shoreline.

(Ord. No. 94-13, § 10, 6-21-94)

Sec. 11-261. Fishing.

Except where specifically designated, fishing, or the buying or selling of fish caught in any natural area waters, is prohibited in all natural areas.

(Ord. No. 94-13, § 11, 6-21-94)

Sec. 11-262. Prohibited activities.

The following are prohibited in county-managed natural areas:

(a) Hunting, trapping, or the possession of any kind of trapping device. Licensed hunters and trappers authorized by the county administrator or his designee to remove nuisance and exotic animals are exempt from this prohibition, as are licensed hunters authorized by the county administrator or his designee to reduce excessive populations of animals causing environmental damage in a natural area.

(b) Use of firearms or other weapons potentially inimical to wildlife and dangerous to human safety by persons other than authorized law enforcement personnel and persons authorized to remove nuisance and exotic animals. This prohibition includes shooting into a natural area from beyond the boundaries of the natural area.

(c) The sale, purchase, consumption, or possession of alcoholic beverages as defined in section 561.01(4), Florida Statutes.

(d) Use, discharge or possession of fireworks, explosives, or substances that could be combined into an explosive mixture.

(e) Domestic animals and pets.

(f) Placement of beehives or other apicultural practices.

(g) Cultivation of plants.

(h) Vehicle repair.

(i) Use of airboats.

(j) Loud, unnecessary noise that disturbs wildlife and produces physical discomfort or annoyance to other people.

(k) Possession and release of inflated balloons.

(Ord. No. 94-13, § 12, 6-21-94)

Sec. 11-263. Activities requiring a special permit.

The following activities may be allowed only if a written permit is obtained from the county administrator or his authorized designee. Written terms and conditions shall accompany each permit, and a fee will be charged as set by resolution of the board of county commissioners. The decision on whether or not to issue a permit will be based on the potential for damage to the natural resources of the site, the carrying capacity for that particular use, and any conflicts with a previously issued permit for the same use. The activities requiring a special permit are:

(a) Camping.

(b) Erection of temporary or permanent structures.

(c) Horseback riding.

(d) Public demonstrations and gatherings.

(f) Collection of plant and animal specimens and use of watercraft in wetlands for scientific research.

(g) After-hours and night-time use of natural areas.

(Ord. No. 94-13, § 13, 6-21-94)

Sec. 11-264. Merchandising, advertising and signs.

(a) No person shall expose or offer for sale, rent or trade any article or thing, or station or place any stand, cart, or vehicle for the transportation, sale or display of any article, merchandise, or other item within the limits of any natural area.

(b) No person shall use the natural area roadways or paths, or enter any natural area, for the purpose of announcing, displaying, advertising or calling attention to any person, political party, religious institution, or meetings or assemblies thereof, or for the purpose of demonstrating, advertising or calling attention to any article or service for sale or for hire; nor shall any signs, slogans, loudspeakers or advertising display be used for such purposes unless a written permit allows such activity.
(c) No person shall display, distribute, post, paste, glue, tack, or otherwise fix any handbill, pamphlet, circular, sign, placard or any other printed matter containing advertising within any natural area or upon any natural area tree, fence or other structure.
(Ord. No. 94-13, § 14, 6-21-94)

Sec. 11-265. Pollution of waters.
No person shall throw, discharge, or otherwise place or cause to be placed in the waters of any pond, lake, canal, slough, marsh, wet prairie, lagoon, or any other body of water or wetland in any natural area, any substance, matter, object or item which will or may result in pollution of those waters.
(Ord. No. 94-13, § 15, 6-21-94)

Sec. 11-266. Refuse and trash.
No person shall take into, dump or deposit on land of, or leave in, any natural area or county road abutting such natural area, bottles, broken glass, ashes, paper, boxes, cans, dirt, construction or agricultural debris, rubbish, waste, garbage, refuse, or any other solid or liquid discard. Such discard shall be placed in the proper receptacles where provided on a natural area. Where receptacles are not provided, all such discard shall be carried away from the natural area and properly disposed of by the person responsible for its presence.
(Ord. No. 94-13, § 16, 6-21-94)

Sec. 11-267. Public utilities.
No entity shall be allowed to place any new public service utility into, upon, or across natural area lands except by prior written permit from the county administrator or his designee.
(Ord. No. 94-13, § 17, 6-21-94)

Sec. 11-268. Closing of natural areas.
(a) Each natural area managed by the county shall be open to the public at hours and days that are determined to be appropriate and adopted as part of the management plan for that natural area. These hours shall be posted at each natural area.
(b) The county administrator or his designee may declare any section of a natural area closed to the public, either temporarily or at regularly stated intervals, in order to protect natural resource protection, public safety, health and/or welfare.
(c) No person shall remain in any natural area during the hours that the natural area is closed, unless he or she has a permit.
(Ord. No. 94-13, § 18, 6-21-94)

Sec. 11-269. Vehicles.
(a) All state vehicle laws and county traffic regulations shall be applicable in all natural areas. Municipal traffic ordinances shall be applicable in those natural areas located within municipalities.
(b) No person shall drive, operate, or propel any vehicle outside the boundaries of designated paved or improved natural area access roads or driveways unless specifically authorized by the county administrator or his designee.
(c) No person shall park any vehicle on a natural area at any place other than a designated parking area without prior authorization from the county administrator or his designee. No person shall park any vehicle in a manner that blocks or impedes access to a parking area or access road. No vehicle shall be

left in a parking area or access road. No vehicle shall be left in a parking area overnight without prior authorization by the county administrator or his designee.
(Ord. No. 94-13, § 19, 6-21-94)

Sec. 11-270. Enforcement.
(a) It shall be the duty and responsibility of law enforcement officials to, within their jurisdiction, enforce all state laws, municipal ordinances, county ordinances, and county traffic regulations within and adjacent to the limits of all natural areas maintained and operated by the department.
(b) It shall be unlawful for any person to do any act forbidden, or fail to perform any act required, by this article or for any person to fail to comply with any lawful and reasonable order given by law enforcement officers or authorized department officials. It shall be the duty and responsibility of law enforcement officers and authorized department officials to enforce all natural areas rules.
(Ord. No. 94-13, § 20, 6-21-94)

Sec. 11-271. Penalties.
The violation of any provision of this article shall be punishable by a fine not to exceed five hundred dollars ($500.00), or by imprisonment in the county jail not to exceed sixty (60) days, or by both such fine and imprisonment, or by such other penalty as may hereafter be provided in section 125.69, Florida Statutes.
(Ord. No. 94-13, § 21, 6-21-94)

Sec. 11-272. Municipal ordinances and land development regulations.
This article does not supersede any municipal ordinance or land development regulation.
(Ord. No. 94-13, § 23, 6-21-94)
Secs. 11-273--11-290. Reserved.

# Palm Beach County Parks and Recreation
# ORDINANCE NO. 2004-022

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSI0NERS OF PALM BEACH COUNTY, FLORIDA, KNOWN AS THE APALM BEACH COUNTY PARKS AND RECREATION ORDINANCE@; PROVIDING FOR THE AUTHORITY OF THE DIRECTOR OF PARKS AND RECREATION; PROVIDING FOR DEFINITIONS; PROVIDING FOR REGULATION OF PARK TRAFFIC, PROPERTY, WILDLIFE, AND RECREATIONAL ACTIVITIES; PROVIDING FOR REGULATION OF ANIMALS, FIREARMS, FIREWORKS AND ALCOHOLIC BEVERAGES; PROVIDING FOR PARK USAGE, RESERVED PARK/FACILITY AREAS, SANITATION AND POLLUTION CONTROL; PROVIDING FOR REGULATION OF COMMERCIAL ACTIVITIES, AIRCRAFT, AND PUBLIC UTILITIES; PROVIDING FOR PARK HOURS; PROVIDING FOR ENFORCEMENT, PROVIDING FOR PENALTIES; PROVIDING FOR REPEAL OF ORDINANCE NO. 96-44; PROVIDING FOR REPEAL OF LAWS IN CONFLICT; PROVIDING FOR INCLUSION IN THE CODE OF LAWS AND ORDINANCES OF PALM BEACH COUNTY; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, Section 125.01(f), Florida Statutes, grants Palm Beach County the power to provide parks, preserves, playgrounds, recreation areas and other recreational facilities for the welfare of its citizens; and

WHEREAS, it is necessary to repeal Ordinance No.96-44, to conform with federal and state law and to provide for more efficient and effective operations of Palm Beach County parks and recreation areas.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF PALM BEACH COUNTY, FLORIDA, that:

SECTION 1. TITLE

This Ordinance may be cited as the APalm Beach County Parks and Recreation Ordinance.@

SECTION 2. AUTHORITY OF THE DIRECTOR OF PARKS AND RECREATION

Subject to the direction of the Board of County Commissioners or the County Administrator, all powers, duties and authorities relating to the operation of the Palm Beach County Parks and Recreation system for the Board of County Commissioners, are vested in the Director of Parks and Recreation unless specifically vested elsewhere by the provisions of this Ordinance. In the absence of the Director of Parks and Recreation, a Supervisor over the Director of Parks and Recreation, or an individual specifically appointed by the County Administrator, may assume the powers, duties, and authority vested by this section.

SECTION 3. DEFINITIONS

The following terms when used in this Ordinance shall have the meanings ascribed to them in this section:

(A) BEACH, WATER AREA, WATERPARKS OR POOL. Any beach, water area, waterpark or pool designated by the Board of County Commissioners as such, within any park property, either on the ocean or inland, including the actual sand beach, if any, used for swimming and wading.

(B) DEPARTMENT. The term "the Department" when used herein is defined as the "Palm Beach County Parks and Recreation Department".

(C) DIRECTOR. The terms "Director" or "Parks Director" when used hereinafter are defined as the Director of the Palm Beach County Parks and Recreation Department or his designee

(D) EXOTIC ANIMAL. A non-native animal species that occurs in South Florida, as a result of direct or indirect, deliberate or accidental actions by humans, which may include, but not be limited to, domestic, semi-domestic or feral animals.

(E) NATIVE ANIMAL. An animal species that occurs naturally in or is indigenous to South Florida.

(F) PARK. The terms "park", "parkways", "recreational areas", "natural areas", "marinas" and "areas operated and maintained by the Department" may include, but is not limited to, parks, wayside parks,

parkways, playgrounds, recreation fields, open green spaces, golf courses, community centers, museums, auditoriums, ranges, lakes, streams, canals, lagoons, waterways, pools, waterparks, water areas and beaches therein and all on grounds, water areas, buildings and structures in Palm Beach County which are under the control of or assigned for upkeep, maintenance or operation by the Department.
(G) PARKING AREA. Any designated part of any park road, drive or area that is designated for the standing or stationing of any vehicles.
(H) PARK PROPERTY. The term Apark property@ is defined to cover all areas, grounds, buildings, locations and facilities described in the foregoing section "F".
(I)
PERMIT
. The term "permit" means a document or certificate provided by the
Department granting permission for use of reserved park/facility areas and which sets forth terms and conditions applicable thereto.
(J) PERSON. The word "person" includes natural persons, firms, associations, joint ventures, partnerships, estates, trusts, business trusts, syndicates, fiduciaries, corporations, and all other groups and combinations.
(K) VEHICLE. The term "vehicle" means any wheeled conveyance (except a baby carriage or wheelchair) for transportation of persons or materials whether: (1) powered or drawn by motor such as an automobile, truck, motorcycle, scooter, minibike, or recreational vehicle; (2) animal-drawn such as a carriage, wagon, or cart; (3) self-propelled such as a bicycle, tricycle, or skateboard; or (4) towed such as a trailer of any size, kind or description. "Vehicle" does not include any recreational or park transportation service operated or authorized by the Department.
SECTION 4. REGULATION OF VEHICLES WITHIN PARKS
(A) All applicable state or local vehicle laws are enforceable within park property.
(B) All law enforcement officers shall direct traffic and enforce all motor vehicle, traffic and parking laws of this County including the Palm Beach County Parking Ordinance, codified in Chapter 19 of the County Code, as may be amended, and enforce all rules and regulations set forth by the Department within park property. Park personnel, authorized and designated by the Director, may direct traffic and enforce the rules and regulations set forth by the Department with park property.
(C) The Director shall determine and all persons shall carefully observe and obey all traffic signs indicating speed, direction, caution, stopping, or parking, and all other signs posted for proper control and the safeguarding of life and property.
(D) Notwithstanding Paragraph (A) above, where a public road traverses a County
Park, said road shall be open to all through traffic permitted on any County road or highway, but such through traffic shall conform to park speed and traffic regulations.
(E) No person driving, operating, controlling or propelling any vehicle whether motorized, horse drawn, or self-propelled, shall use any other than the regularly designated paved or improved park roads, pathways, trails, or driveways, except when directed to do so by a law enforcement officer or Department employee or by official signs or markings. No driver or operator of any vehicle shall obstruct traffic or stop on any road or driveway except those places so designated.
(F) No person shall park a vehicle on park property at any place other than in the regular designated facilities provided for that particular type of vehicle, unless directed otherwise by a law enforcement officer or Department employee or by official signs or markings. No driver or operator of any vehicle shall park on any road or driveway except those places so designated. No driver or operator of any vehicle shall leave a vehicle parked on any road, driveway or park property after posted closing hours.
(G) No truck, commercial vehicle or bus shall be driven on any restricted service road or property without prior authorization from the Department for the purpose of park work, service, or activities.
(H) No person shall ride, drive or propel any bicycle, motorcycle, all-terrain vehicle (ATV), scooter, minibike or similar vehicle on any but the regular vehicle roads except for those areas designated for such specified use. The designated bicycle trails shall be used only by pedestrians and bicycles and other vehicles propelled by human power. It is expressly provided that no vehicles, motorcycles,

scooters, minibikes, or similar vehicles shall be ridden on the designated nature trails located within Palm Beach County parks. No person shall deviate from compliance with all applicable vehicle laws and regulations governing the operation of the above vehicles while on park property.
(I) No person shall change parts, repair, wash or grease a vehicle on any park roadway, parkway, driveway, parking lot or other park property. No driver of a vehicle using gasoline or any other explosive mixture as source of power shall at any time fail to use an adequate muffler or sound deadening device.
SECTION 5. BUILDINGS AND OTHER PROPERTY
(A) No person shall willfully mark, deface, injure in any way, displace, remove or tamper with any park buildings, bridges, tables, benches, fireplaces, railings, paving, water lines or other public utilities or parts of appurtenances thereof, park signs, notices or placards whether temporary or permanent, monuments, stakes, posts or other boundary markers, or other structures of equipment, facilities or park property or appurtenances whatsoever, either real or personal.
(B) No person shall dig, move or remove from any park area any beach sand, soil, rocks, stones, trees, shrubs, whether submerged or not, or plants, down-timber, or other wood or materials, or make any excavation by tool, equipment, or other means, or construct or erect any building or structure of whatever kind, whether permanent or temporary in character, or run or string any public service utility into, upon, or across such land, or affix any materials to any park property, except with the prior written approval of the Director.
(C) No person shall excavate or remove any artifact from any archeologically sensitive areas with particular concern to Native American burial grounds and living sites.
SECTION 6. FIRE
(A) No person shall build or attempt to build any fire within any park property except in such areas where fireplaces or grills are provided and under such regulations as are or may be specifically set forth by the Director. No person shall drop, throw, or otherwise deposit lighted matches, burning cigarettes or cigars, or other flammable material within any park property.
SECTION 7. PLANT AND WILDLIFE PROTECTION AND PRESERVATION
(A) Within any park, no person shall cut, carve, or injure the bark or break off limbs or branches or pick the flowers or seeds, of any tree, plant or shrub, nor shall any person dig in or otherwise disturb grass areas, or install any vegetation, or in any other way injure or impair the natural beauty or usefulness of any area, nor shall any person pile debris or material of any kind on or about any tree or plant, or attach any rope, wire, or other contrivance therein, whether temporary or permanent in character or use, without prior approval by the Director. No person shall tie or hitch any animal to any tree or plant within park property.
(B) No person shall remove, molest, harm, frighten, kill, trap, hunt, chase, shoot or throw any object at any animal, nor shall any person remove or possess the eggs, nests or young of any wild animal whether alive or dead without prior approval from the Director.
(C) It shall be unlawful for any person to knowingly interfere with or damage any humane animal trap owned by the department, or another county department or agent, or to molest or release any animal caught therein.
SECTION 8. CONTROL OF NUISANCE ANIMALS (A) The introduction, by any person, of any exotic animal or the placement, abandonment or leaving of any animal in a County park is strictly forbidden.
(B) The feeding, by any person, of any exotic or native animal in a County park is hereby strictly forbidden unless specifically authorized by the Department Director.
(C) Exotic animals, with the exception of those authorized by the Director, roaming free in County parks are hereby declared a nuisance. The Director has the authority to establish processes and procedures to control, and remove from the park, species that are declared to constitute a nuisance.

(D) The Director is hereby authorized to declare certain native species, located in identified parks, to constitute a nuisance. Native species shall be determined to be a nuisance when the Director deems that

the number, location, behavior or other characteristic of the native species constitutes a hazard to human health and/or safety or to the resources of the particular park.

SECTION 9. SWIMMING AND WADING

(A) No person shall swim or wade in any beach, water area, waterpark or pool within any park property, except where specifically designated and in compliance with such regulations as to hours of the day and safety limitations for such use as set by the Department.

(B) In areas designated for swimming and wading, all persons shall be so covered with clothing or a bathing suit so as to prevent any indecent exposure of the person.

SECTION 10. BOATING

(A) In addition to the provisions set forth in Chapter 327, Florida Statutes, the following regulations shall apply to recreational area waters within park property:

(1) No person shall bring into, launch, or operate any vessel (as defined in Section 327.02, Florida Statutes, as may be amended) upon any park property, including designated swimming areas, except at such places as are or may be designated for such use or purposes by the Board of County Commissioners or the Director. Such operation or use shall be in accordance with such rules and regulations as are now or may hereafter be adopted by the Department. Boating permits may be required by the Department for specific boating activities within park property.

(2) No person shall moor, anchor, or tie up to the bank or any wharf, dock, tree, building, rock or any object or structure on the bank in waters within park property or property managed by the Department unless said person does so in pursuit of recreational activities of a temporary nature or unless the owner of the vessel has obtained written permission from the Director, except in an emergency situation.

(3) No person shall launch, dock or operate any vessel on the waters of any park between the closing hour of the park at night and opening hour the following morning, with the exception of designated 24 hour boating facilities, nor shall any person be on, or remain on or in, any vessel in the park during the said closed hours of the park, except with prior approval of the Director.

(4) Boat operators shall be responsible for their own wake and liable for any damage it may cause.

(5) During the staging of Department approved special events, all non-participating vessels and spectators shall be prohibited from entering the boat pit area and from obstructing any race, ski courses or special event.

(6) No person shall operate airboats or hovercraft within park property except by approval from the Director.

(7) The Director shall have the authority to establish regulations and speed limits of vessels that utilize the water areas located within park property unless otherwise pre-empted by the State.

(B) The Department shall establish rules and regulations for use of the County's permanent boat slips for dockage of vessels, managed mooring fields and other marine facilities by the public. Rates for said usage shall be established by the Board of County Commissioners.

(C) No person shall rent, hire, or operate any vessel within park property for a commercial purpose unless so permitted by the Department.

SECTION 11. WATER SKIING

(A) No person shall water ski within park property except in such places as designated by the Director, and in compliance with rules and regulations as are now or may hereafter be adopted.

(B) No person shall water ski in such manner as to endanger bystanders, swimmers, other skiers, or occupants of other vessels.

(C) No person shall obstruct the takeoff and landing areas designated for water skiing for any purpose other than for normal water skiing activities.

(D) No water skiing is permitted after sunset or before sunrise, except in areas designated for such use.

SECTION 12. FISHING

(A) The buying or selling of fish is prohibited within park property.

(B) Sport fishing is allowed within park property except where specifically prohibited.

(C) The use of a troll line for fishing purposes is prohibited within park property. Set cane poles are permitted if attended.
(D) All applicable State laws pertaining to fishing and licensing shall be enforced within Park property.
(E) The Director may establish specific fishing regulations for various water bodies within park property.
SECTION 13. FIREARMS
No person shall use or possess firearms, weapons or trapping devices within any park property except with prior approval from the Director or in any area designated by the Department for such purpose. The Director shall establish rules and regulations pertaining to shooting or archery ranges. Shooting into park areas from beyond park boundaries is prohibited.
SECTION 14. PICNIC AREAS AND USE
(A) Except for reserved park/facility areas, individual picnic tables and associated grills are available on a first come, first served@ basis.
(B) No person shall use a grill or other device in such a manner as to burn, char, mar or blemish any bench, table, or other object of park property nor shall any person starting a fire leave the area without extinguishing said fire.
SECTION 15. CAMPING
No person shall camp within any park property except in areas designated by the Director for said purpose. The Department may establish rules and regulations for designated camping areas within park property. Rates for said use shall be established by the Board of County Commissioners. Camping units are to be of commercial manufacture and be of flame retardant material. House trailers are prohibited.
SECTION 16. HORSEBACK RIDING
No person shall engage in horseback riding within any park property except in areas designated by the Director for said purpose. In areas designated for horseback riding, horses must be thoroughly broken, properly restrained, and prevented from grazing and straying unattended. All riders must carry proof of their horse=s negative coggins test.
SECTION 17. ANIMALS
(A) Except in specified areas, domesticated animals are permitted within Park property. Said animals must be restrained at all times at a distance not greater than six (6) feet in length from their handler.
(B) No person shall bring into, nor allow to enter, any park property any non-domesticated animals including, but not limited to, cattle, mules, swine, sheep, goats, fowl or reptiles except where in conjunction with projects sponsored by County Departments or upon permit from the Director.
(C) Dangerous dogs, as defined in Chapter 767, Florida Statutes, are prohibited from park property.
(D) In conjunction with projects and facilities administered by County Departments or upon permit from the Director, animals may be allowed in designated areas of the parks at specified times without restraint.
SECTION 18. ALCOHOLIC BEVERAGES
(A) The sale, purchase, consumption, and possession of alcoholic beverages as defined in Section 561.01(4), Florida Statutes, is hereby prohibited within park property except as specifically provided in accordance with the provisions set forth herein.
(B) Notwithstanding the prohibition set forth in Paragraph (A) above, the possession of alcoholic beverages in sealed original packages in any vehicle, vessel, or conveyance for purposes of storing or transporting such and not for purposes of selling or consuming such within park property shall not be a violation of this Ordinance.
(C) The Director may designate specific areas in which alcoholic beverages may be possessed and/or consumed. Designated areas may include, but are not limited to, picnic areas, areas reserved for large groups, and facilities for food service. Kegs of beer or other alcoholic malt liquor will be authorized only by permit and in conjunction with a reserved park facility area.
(D) The Director may permit, in writing, the sale, possession, and/or consumption of alcoholic beverages incidental to a special event. Said permission may not exceed four consecutive days.
(E) The Board of County Commissioners may permit the sale of alcoholic beverages by private contractors who operate or manage facilities within park property including but not limited to food

service, performing arts, golf courses, and other facilities, as the Board of County Commissioner deems appropriate.

(F) At its option, the County may obtain, in its name, the necessary State licensing for the sale of alcoholic beverages. The County may, at its option, have such license transferred to a contractor=s or lessee=s name, provided, however, that such licensing shall immediately revert to the County upon termination, for any reason, of the contractor=s agreement or lessee=s lease with the County. The license holder shall take all action and execute all documents necessary to effect said transfer to the County.

(G) The permission granted under this Section shall be subject to all ordinances, laws rules and regulations applicable in Palm Beach County, and any grantee shall be responsible for compliance thereto. The permission granted may also be subject to, and granted with, specific conditions as set forth by the Department, and the grantee shall be responsible for insuring compliance thereto.

(H) No person who is intoxicated or under the influence of drugs will be permitted in parks or recreation areas.

SECTION 19. FIREWORKS AND EXPLOSIVES

(A) No person shall bring into or have in his possession, or set off or otherwise cause to explode or discharge or burn within any park property any firecrackers, torpedoes, rockets or other fireworks or explosives of flammable material, or discharge them or throw them onto any park property from land or water adjacent thereto. Parents or guardians shall be held strictly responsible and accountable for the actions of minors. Violators will be subject to prosecution accordingly.

(B) The Director may permit organizations and entities to conduct fireworks displays within Palm Beach County Parks, subject to full compliance with the Palm Beach County Fire Code or other applicable County Ordinances, or the ordinances of any municipality having jurisdiction to regulate said fireworks display.

SECTION 20. PARK USAGE

(A) It is the policy of Palm Beach County to afford all citizens the opportunity to utilize County parks and also to participate in free speech activities within park property to the fullest extent permitted by law. The Parks and Recreation Director has the authority to establish guidelines for the permitting of special events, demonstrations, gatherings, performances or other mass assemblages at county parks.

(B) No person shall be or remain in any part of any park property between sunset and sunrise or as specifically posted. The provisions of this section shall not apply to police officers or department employees while in the discharge of their duties nor to persons having a permit in writing issued by the department to be or remain in any part of the parks between such hours. The Department Director has the authority to establish exceptions to the closing hours as set forth above when it is in the interest of the public health, safety or welfare and such exceptions shall be posted.

(C) No person shall loiter in or around any park areas including, but not limited to, restrooms, dressing rooms or bathhouses, picnic shelters/areas, wooded or natural/undeveloped areas.

SECTION 21. COMMERCIAL ACTIVITIES

(A) No person shall park or station on any park property any vehicle displaying a sign or notice with the intent of offering said vehicle for sale or exchange.

(B) No person shall advertise or offer for sale any article, material, or service, nor place any stand, cart, or vehicle for the transportation, sale, trade or display of any article, material or service for sale or trade within any park area unless in conjunction with a permitted use of a reserved park/facility area.

(C) No person shall distribute, display or affix any printed materials or advertisements to or within any park property. Exceptions to this rule are printed materials or advertisements permanently affixed on vehicles or on clothing, distribution of printed handbills or leaflets the purpose of which is not solely commercial, announcements of park sponsored or sanctioned events; authorized signs located entirely within concession structures, and signs or distribution of printed materials in conjunction with a permitted use of reserved park/facility area.

SECTION 22. RESERVED PARK/FACILITY AREAS

Park/facility areas shall not be reserved except by permit issued by the Director. Said reserved park/facility areas include athletic fields, group picnic shelters and associated facilities, recreation and civic facilities, and those areas requested for use for special events. Persons permitted for use of reserved park/facility areas must comply with all applicable rules and regulations as may be established by the Department. Permits requested for use of reserved park/facility areas for for-profit activities require approval by the Board of County Commissioners.

SECTION 23. PERMITS

The Director has the authority to develop permitting systems and related rules and regulations for the use of Park facilities. Violations of permit requirements shall result in suspension or revocation of such permit.

SECTION 24. NOISE

No person shall make such loud, excessive, unnecessary noise so as to create a nuisance in any County park. Noise shall be considered a nuisance where it produces actual physical discomfort and annoyance to persons of ordinary sensibilities.

SECTION 25. AIRCRAFT

No one operating, directing or responsible for any aircraft, seaplane, helicopter, glider, balloon, dirigible, parachute or other aerial apparatus shall take off from or land within Park property except in emergency law enforcement situations or when written permission has been obtained from the Director.

SECTION 26. POLLUTION OF WATERS

No person shall throw, discharge or otherwise place or cause to be placed in the waters of any fountain, pond, lake, stream, bay or other body of water within Park property any substance, matter or thing, liquid or solid, which will or may result in the pollution of said waters.

SECTION 27. REFUSE, TRASH AND LITTER

(A) No person shall take into, dump, deposit or litter any bottles, broken glass, ashes, printed material, paper, boxes, cans, dirt, rubbish, waste, garbage, refuse or other trash upon any park property. Persons shall place all bottles, broken glass, ashes, printed material, paper, boxes, cans, dirt, rubbish, waste, garbage, refuse or other trash in the proper receptacles where provided; where receptacles are not provided, same shall be carried away from park property by the person or persons responsible for its presence and properly disposed of elsewhere.

(B) No person shall affix printed material or any other item to any vehicle within park property other than their own vehicle.

SECTION 28. PUBLIC UTILITIES

Public utilities serving park property or traversing park property shall be subject to reasonable regulations as may be hereafter adopted in the public interest in order to protect County parks from unsightly and inconveniently located fixtures, installations and facilities.

SECTION 29. PARK HOURS

(A) Except for unusual and unforeseen emergencies and twenty-four (24) hour boat launching, fishing and camping areas, all parks shall be open to the public every day of the year during hours designated by the Director. The opening and closing hours shall be posted at each park in order to give notice to the public.

(B) The Director, acting as agent of the Board of County Commissioners, may declare any section or part of any park closed to the public at any time and for any interval of time, either temporary or at regular and stated intervals (daily or otherwise) and either entirely or merely for certain uses.

(C) No unauthorized person shall be or remain within park property during those hours when the park is closed.

(D) No person shall enter upon park property which is under construction, in a state of disrepair, or withheld from general public usage in the interest of public safety, health and/or welfare.

SECTION 30. ENFORCEMENT

(A) It shall be the duty and responsibility of all law enforcement officers within their jurisdiction to enforce all State laws, municipal ordinances, County ordinances, and County traffic regulations within park property and other areas maintained and operated by the Department.

(B) It shall be the duty and responsibility of law enforcement officers and designated Department employees to enforce all park rules and regulations. It shall be unlawful for any person to do any act forbidden or fail to perform any act required by these rules or for any person to fail to comply with any lawful and reasonable order given by law enforcement officers. Violators of this Ordinance may be ordered to leave Park areas by law enforcement officers and designated Department employees. Failure to leave once ordered constitutes a separate violation of this Ordinance.

(C) It shall be the duty and responsibility of law enforcement officers and authorized Department employees to enforce all provisions of permits issued by the Department. It shall be unlawful for any person to do any act forbidden or fail to perform any act required by any permit issued by the Department. Copies of regulations pertaining to reserved park/facility areas may shall be furnished with each permit issued.

SECTION 31. PENALTIES

Failure to comply with the provisions set forth in this Ordinance shall constitute a violation of a County Ordinance and shall be punished upon conviction, pursuant to Section 125.69(1), Florida Statutes, by a fine not to exceed $500.00 dollars per violation per day for as long as the violation continues or imprisonment not exceeding sixty (60) days, or both fine and imprisonment.

Violations of this Ordinance that are continuous with respect to time may be abated by injunctive or other equitable relief. The imposition of a penalty does not prevent equitable relief.

SECTION 32. SAVINGS CLAUSE

This Ordinance shall not affect or impair the processing and implementation of any permit issued or any act authorized pursuant to the provisions of Ordinance No. 96-44. All permits and authorizations initiated under said Ordinance shall continue in full force and effect until completed. Upon expiration of an existing permit or authorization, the permittee or authorized person must apply for a new permit or seek authorization in accordance with the provisions as set forth herein.

SECTION 33. REPEAL OF LAWS IN CONFLICT

Ordinance No. 96-44 is hereby repealed in its entirety. All local laws and ordinances in conflict with any provisions of this Ordinance are hereby repealed to the extent of such conflict.

SECTION 34. SEVERABILITY

If any provision, article, section, paragraph, sentence, clause, phrase, or word of this Ordinance is for any reason held by the Court to be unconstitutional, inoperative or void, such holding shall not affect the remainder of this Ordinance.

SECTION 35. INCLUSION IN THE CODE OF LAWS AND ORDINANCES

The provisions of this Ordinance shall become and made a part of the Code of Laws and Ordinances of Palm Beach County, Florida. The Articles and Sections of this Ordinance may be renumbered or relettered to accomplish such, and the word

A Ordinance may be changed to A Section, Article, or any other appropriate word.

SECTION 36. EFFECTIVE DATE

The provisions of this Ordinance shall become effective upon filing with the Secretary of State.

APPROVED AND ADOPTED by the Board of County Commissioners of Palm Beach County, Florida, this _____ day of _____, 2004.

ATTEST: PALM BEACH COUNTY, FLORIDA, BY ITS
SHARON R. BOCK, BOARD OF COUNTY COMMISSIONERS
CLERK & COMPTROLLER, PBC

By:_____ By: _____
Deputy Clerk Karen T. Marcus, Chair

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY

By:_____
County Attorney

EFFECTIVE DATE: Filed with the Department of State on the _____ day of _____, 2004.

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## D. References


Davis, Joseph. 1991. Camp Jupiter, Palm Beach County. January, *AHC Technical Report #26.*

Carr, R.S., W.S. Steele, J. Pepe, and R. Ferrer. 1992 An Archaeological Survey and Management Plan of the Town of Palm Beach. October, 1992. AHC Technical Report #61.

Carr, Robert S., Willard Steele, James Pepe and Linda Jester. 1994. An Archaeological Assessment and Survey of Riverbend Park, Palm Beach County, Florida. *AHC Technical Report #106.*

Carr, Robert S., Linda Jester and James Pepe. 1995. Phase II Archaeological Excavations of the Riverbend #12 Site, 8PB7984, Palm Beach County, Florida. *AHC Technical Report #112.*

Carr, Robert S. and James Pepe. 1995. Archaeological and Historical Elements for the Management of Riverbend Park, Palm Beach County, Florida. *AHC Technical Report #133.*

Carr, Robert S., M.S. 2005. An Archaeological Assessment of the Pennock Point Parcel, Lots 2 - 6, Palm Beach County, Florida. *AHC Technical Report #601.*

Hawkes, C.V. 2003. Nitrogen Cycling Mediated by Biological Soil Crusts and Arbuscular Mycorrhizal Fungi. Ecology. 84: 1553-1562.

Hawkes, C.V. 2000. Biological soil crusts and their interactions with vascular plants in a xeric Florida shrubland. Ph.D. Dissertation, Univ. Pennsylvania. [Archbold library call number: 581.5/975.9/H2000]

Kennedy, W.J., S.Lewis, N. Cassel, L. Jester, J. Pepe and A.J. Sassi. 1991. The SR706/Indiantown Road Realignment, Palm Beach County, Florida? Archaeological Reconnaissance Survey and Gildan Right-of-Way & Bridge/Ca. Florida Atlantic University Department of Anthropology, Boca Raton.

Kennedy, W.J., R. Wheeler, L. Spears-Jester, J. Pepe, N. Sinks and C. Wernecke. 1993. Archaeological Survey and Excavations at the Jupiter Inlet I Site (8PB34), DuBois Park, Palm Beach County, Florida. Florida Atlantic University Department of Anthropology, Boca Raton.

Kennedy, W.J., L. Jester, J. Pepe, N. Sinks, C. Wernecke and D. Flaherty, 1994. Phase I and Phase II Archaeological Survey of the Loxahatchee River. Proposed for Environmental Management and Engineering, Palm Beach County.

Kremer, P.R. and W. Spackman. 1981. The paleoecological evidence for environmental change in "neopaleobotanical" sediments of South Florida. In R.C. Romans (ed.) Geobotany II. Plenum Plubishing Co. pp. 35-52.

Milanich, Jerald T. 1994. *Archaeology of Precolumbian Florida*. University of Florida, Gainesville.

Newman, C. and Weisman, B. R. 1992. A preliminary cultural resource inventory of Coupon Bight State Buffer Reserve Monroe County, FL.

Romans, Bernard. 1962. *A Concise Natural History of East and West Florida*. Written in 1775. University Presses of Florida, Gainesville.

Sturtevant, W. C. 1953. Chakaika and the 'Spanish Indians': Documentary Sources Compared with Seminole Tradition. Tequesta 13:35-73. True, DO

True, David O. 1944B. *Memoir of Do. d' Escalente Fontaneda Respecting Florida, written in Spain, about the year 1575*, translated by Buckingham Smith. University of Miami and Historical Association of Southern Florida, Miami.

Wheeler, R.J. 1992. The Riviera Complex: An East Okeechobee Archaeological Area Settlement. The Florida Anthropologist 45(1):5-17.

Williams, J.L. 1837. *The Territory of Florida*. Gainesville: University Press of Florida.